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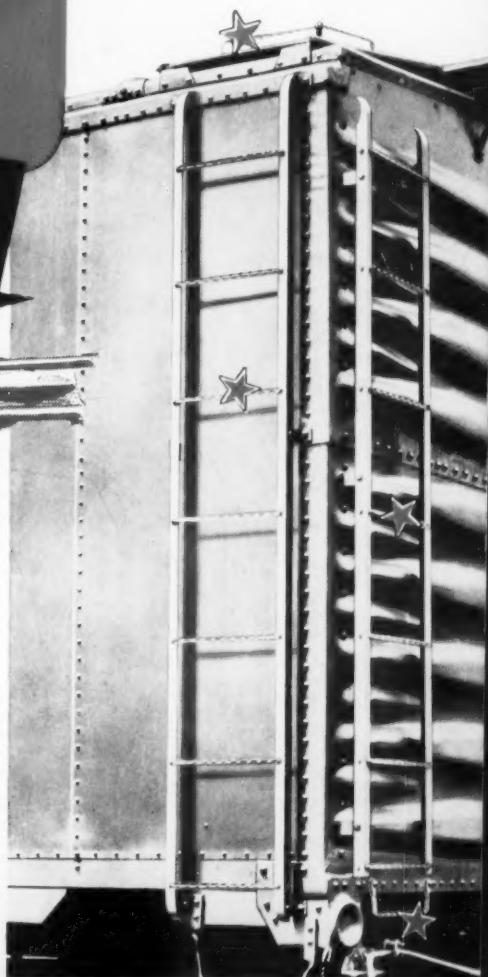
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Proceedings and
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Addresses and
Reports of
Committees

Description and
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of Passenger
Cars Delivered
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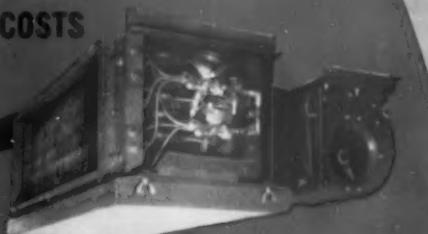
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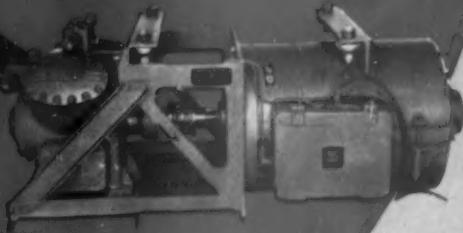
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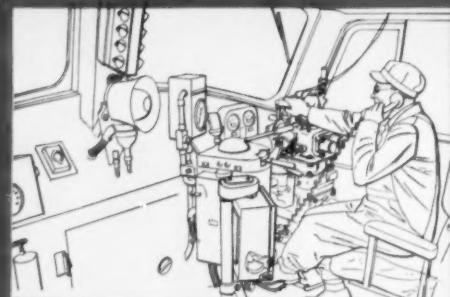
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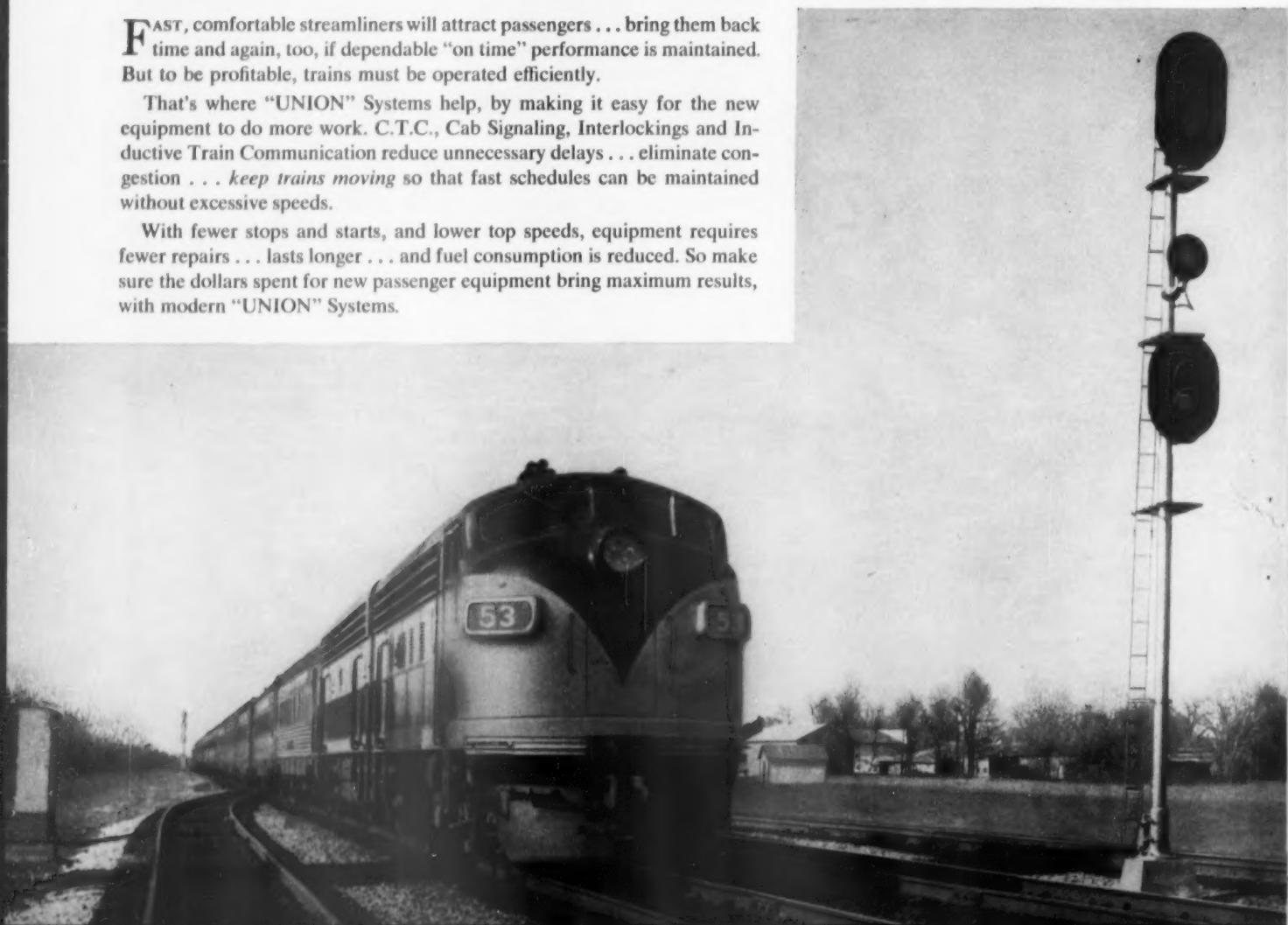
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March 22, 1954

Vol. 136, No. 12

Week at a Glance

Better business is a definite probability within the next few months, A. J. Seitz, executive vice-president of the Union Pacific, told the Pacific Coast Shippers Board on March 12. 13

The "time-lag bill" is still a necessity, in the opinion of Robert B. Murray, Jr., under secretary of commerce for transportation. And railroad rates need revision, thinks I. C. Commissioner J. Monroe Johnson. 9, 15

There were some bright spots in the January revenue picture. Despite generally lower gross, 14 Class I railroads reported increased net railway operating income. The Coast Line was the largest to do so; the Norfolk Southern and DT&I were others, and the rest can be picked out of the Revenue and Expense tables on pages . . . 61 and 62

FORUM: Lost traffic can be turned into an advantage —and the railroads can make themselves independent of the business cycle for their traffic potential—if they will (and can) use their inherent cost advantage competitively. 73

Fifty-nine million dollars worth of new passenger cars —359 of them—are beginning to go into service on the Canadian National. How they will be used, and what they are like, are all reported in this issue.
How they will be used. 74
Pullman-built sleepers, diners and parlor cars. 78
Canadian Car & Foundry coaches. 84

Grade crossing deaths were cut 97.4 per cent over a 10-year period in four Illinois communities, by a carefully planned and executed program. 88

Engineers face changing times, as new traffic patterns and technological advances require a different approach to the railroads' varied engineering activities. How to

Taking the "wait" out of freight...



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Current Statistics

Operating revenues, one month	
1954	\$ 749,825,836
1953	863,014,651
Operating expenses, one month	
1954	\$ 626,806,095
1953	661,700,939
Taxes, one month	
1954	\$ 71,460,303
1953	102,920,396
Net railway operating income, one month	
1954	\$ 32,574,078
1953	80,069,353
Net income, estimated, one month	
1954	\$ 18,000,000
1953	57,000,000
Average price railroad stocks	
March 16, 1954	61.26
March 17, 1953	69.47
Carloadings, revenue freight	
Ten weeks, 1954	6,019,633
Ten weeks, 1953	6,766,206
Average daily freight car surplus	
Week ended March 13, 1954	129,260
Week ended March 14, 1953	74,325
Average daily freight car shortage	
Week ended March 13, 1954	197
Week ended March 14, 1953	1,730
Freight cars delivered	
February 1954	3,974
February 1953	7,780
Freight cars on order	
March 1, 1954	25,441
March 1, 1953	71,883

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX AND BY THE ENGINEERING INDEX SERVICE. RAILWAY AGE INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE.

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Week at a Glance CONTINUED

meet the changes was the major topic of the A.R.E.A.'s 53rd annual convention, held last week at Chicago. 90

A.R.E.A. committee report abstracts. 93

B R I E F S

Whether a union is "national in scope" under the Railway Labor Act is a matter for determination "exclusively" by the National Railroad Adjustment Board. The U. S. Supreme Court has refused to review lower court rulings to that effect, thus leaving them in force. Employees belonging to another union "national in scope" are not required to join the organization holding a union shop agreement.

Sharply higher insurance requirements on truckers of "inflammable liquids, dangerous explosives and other inherently dangerous commodities" have been asked of the I.C.C. by railroad operating brotherhoods. The unions said higher liability and property-damage insurance is required to protect the public and members of train crews.

Truck competitive rates on roofing in the Southeast, the result of intensive study and analysis before they were proposed, went into effect on March 16 when, the day before, the I.C.C. refused petitions of truckers that the rates be suspended. In our next week's issue there will be an article setting forth the salient aspects of this interesting and significant rate revision.

The Santa Fe is now thinking of all-dome, or "upper level" coaches for service between Los Angeles and Chicago in the all-coach "El Capitan." The five train sets in this service were equipped with all-dome lounge cars on March 1 (*Railway Age*, February 15, page 7) and new conventional-type long-distance coaches. There are indications that the all-dome coach idea may reach rapid fruition.

The North Western's piggyback operation has produced a substantial and unexpected saving, according to

Passenger Traffic Executives say:

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**"AND— it can bring
millions of additional
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"We know from personal experience that aggressive promotion of the Hertz Rail-Auto Plan is one sound way to switch millions of inter-city motorists from the highways to the railroads!"

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It is estimated that in 1953 motorists drove close to 500 billion miles between cities. Analysis shows that they drove these hazardous tiring miles . . . NOT because they preferred to drive . . . BUT because many times they needed a car at their destination! And remember—this staggering potential of 500 billion miles has hardly been tapped! Now is the time to switch more of this huge mileage to the Hertz Rail-Auto Plan.

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4. HERTZ now spends \$1,000,000 a year in leading national magazines to sell the Rail-Auto Plan. In your own general advertising, promote the Plan. Show its many advantages. Use displays in your ticket offices. Advertise the Plan in your timetables . . . on your billboards . . . highway over-passes.

5. AND REMEMBER—only Hertz—the world's largest rent-a-car system—offers 30 years' experience . . . with more than 8,600 cars at 700 stations in over 550 cities throughout the world. Every car is new, clean . . . and Hertz furnishes all gasoline, oil . . . Public Liability, Property Damage, Fire and Theft Insurance, and \$100.00 deductible collision protection. And remember—Hertz has more than 1,500,000 people who hold Hertz Charge Cards and Courtesy Cards. Also, Hertz honors Rail Credit Cards.

6. If you have any questions—WRITE today for additional information . . . reservation forms and other material that your ticket agents can use.

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Week at a Glance CONTINUED

President Paul E. Feucht. He told members of his traffic staff that in the first three months of operation there was not a single claim for damage, and handling costs had dropped way down because the cost of handling freight from truck to freight car and back again had been eliminated.

Intercity truck tonnage was at a new high of 216.5 million tons in 1953. This was 9.3 per cent above 1952's 198 million tons. The American Trucking Associations index, based on 1941 as 100, reached 270 for last year. The 1952 index was 247.

Chairman Johnson of the I.C.C. is understood to be resisting White House efforts to oust him under the Civil Service retirement-at-70 rule. The term of the 75-year-old commissioner runs to December 31, 1955.

A general 10 per cent increase in railroad rates for handling mail will become effective April 1. The I.C.C. approved the boost, which was not opposed by the Post Office Department. It will produce added revenue of about \$32 million a year.

"Reverse commuting" from New York to its suburbs is becoming more common, as more and more firms move out of the city to escape high taxes and crowded working conditions. Latest development is a new New York Central morning commuter express from New York to Mt. Vernon and White Plains.

Steamship service on British Columbia's Arrow lakes is being abandoned by the Canadian Pacific, and its 55-year-old stern-wheeler "Minto" retired. Another vessel and a barge will be turned over to an individual operator, who will continue partial service, but most of

the former lake traffic now moves via the CPR's Kettle Valley line.

Ways and means by which the recently organized National Small Shipments Conference can aid studies of the A.A.R.'s Less-Carload Research Committee will be explored at a joint meeting to be held in Cincinnati in mid-April. Robert J. Tyler, of Louisville, general traffic manager of Tube Turns, Inc., and the Girdler Corporation, will head a 13-man committee representing the conference. The A.A.R. unit will be headed by G. Homer Hill, director of the Freight Station Section and of L.C.L. research.

Are higher airline fares in the offing? United Air Lines stockholders have been told: "There is a question as to how long . . . air transportation can be offered the public without some upward adjustment of rates. That question will have to be answered soon—and it is essential that, if and when rate increases are sought, the Civil Aeronautics Board take a realistic view of the need for wider profit margins and a more stable return on airline investments."

Larger payloads for trucks would be possible with the Twin Coach Company's new truck cab with engine between the two cab seats, soon to be introduced. Reduced cab and engine compartment space will increase cargo space.

An enlarged program of railway crossing protection in Canada has been outlined to the Board of Transport Commissioners. Various public organizations are urging that the federal government increase its crossing protection/separation appropriations from \$1 million to \$5 million annually; that the board be empowered to pay more than the present 40 per cent of grade separation costs; and that a more intensive campaign of public education be undertaken.



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Convenient portable push-button control permits operator to stand at point of best visibility.



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In for a Diesel truck change this morning — *out* for this evening's trip! With a Whiting Drop Table, lay-up time for repair and maintenance has become a matter of hours instead of days!

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Murray Sees Need for Time-Lag Bill

Transport under secretary says I.C.C. has improved, but need for law still exists

The Department of Commerce will continue to support legislative proposals aimed at removing the "time-lag" from general rate cases.

Robert B. Murray, Jr., under secretary of commerce for transportation, said last week that while the I.C.C. has "substantially" improved its procedural techniques, there still appears to be a need for establishing by law an administrative standard to assure prompt regulatory approval of general revenue increases essential to cover rising expenses.

Inability to obtain prompt action, Mr. Murray said, is one of the "major problems" facing common carriers today. He said it creates a financial burden that is "particularly heavy" on the railroads.

The Commerce Department official spoke at a March 16 meeting of the Washington, D.C., chapter, National Defense Transportation Association. He said the government can help railroads improve their financial status by allowing sufficient managerial discretion to permit prompt adjustment of pricing policies to cost changes and "other competitive circumstances."

Less Regulation—Other points by Mr. Murray were these:

(1) Private enterprise in the transportation field must not be hampered

by needlessly burdensome and complex regulation. Regulation must not stifle initiative.

(2) Earnings during peacetime should be adequate to keep plant, equipment and working organizations in sound condition. The government must "do what it can" to assure a continuing program of capital outlay to maintain plant and equipment.

(3) Carriers can help themselves by continuing to improve efficiency. Equipment modernization is one way to do this.

(4) Consolidation plans, advanced by railroad managements, may be one way to lick the "weak-and-strong-road" problem and lead to maximum economy and efficiency. The government should render all necessary assistance in this direction.

Highway Outlook—Elsewhere in his speech, Mr. Murray commented on the development of "modern high-speed toll highways." He said the Commerce Department recently completed a study of toll road potential and found that, in addition to 2,000 miles now in operation or under construction, about 8,000 additional miles are "potentially suitable" for development.

The under secretary also mentioned the work of his department in airport development, and said recent

studies have led to the conclusion that "some continued federal participation" is desirable at the present time.

Basic standards for determining eligibility of specific airports should be "substantially tightened," and federal aid should be granted only in cases representing "the highest degree of essentiality," Mr. Murray declared. He said the department believes airport terminal buildings should be excluded from federal participation.

Milwaukee Seeks Probe Of Spokane "Gateway"

The Milwaukee has launched a complaint against the Spokane, Portland & Seattle over traffic moving through the Spokane, Wash., gateway. The complaint, filed with the I.C.C., also named two SP&S subsidiaries, the Oregon Electric and Oregon Trunk.

The SP&S is controlled by the Great Northern and Northern Pacific, and the Milwaukee charges these roads have joint rate and through route arrangements which are more favorable than the combination-rate arrangement which SP&S has with Milwaukee.

According to the complaint, the SP&S has refused to equalize the situation, and the Milwaukee would like the I.C.C. to look into the matter.

I.C.C. Seeks Advice About Contract Truckers

The Interstate Commerce Commission is seeking advice as to whether it should recommend to Congress changes in those provisions of the Interstate Commerce Act which relate to contract trucking.

To that end the commission has instituted an inquiry docketed as *Ex Parte No. MC-46*. Interested parties have been invited to present their views in written statements by May 3.

Figures of the Week

Freight Car Loadings

Loadings of revenue freight in the week ended March 13 totaled 609,883 cars, the Association of American Railroads announced on March 18. This was an increase of 19,316 cars, or 3.3 per cent, compared with the previous week; a decrease of 90,300 cars, or 12.9 per cent, compared with the corresponding week last year; and a decrease of 99,092 cars, or 14 per

LATEST VERSION OF SENATE TIME-LAG BILL

Latest version of the time-lag bill pending in the Senate is a proposed amendment in the nature of a substitute for that version of the bill (S.1461) which was reported favorably from the Senate Committee on Interstate and Foreign Commerce last year. (*Railway Age*, June 1, 1953, page 13.)

The amendment has been proposed by the committee's chairman, Senator Bricker, Republican of Ohio, for himself and Senators Johnson, Democrat of Colorado, and Copehart, Republican of Indiana. Mr. Bricker said he believed the proposed changes would remove "every valid ground for objection" to the proposed legislation, and thus end "all substantial opposition" to its enactment.

The proposed substitute retains the provision which would require the commission to act on general-rate-increase petitions within 60 days after

they are filed. Meanwhile, it is made clear that the commission's action can be denial of any increase.

The standard which would guide the commission's action is rewritten in the substitute version to eliminate references to carrier needs to "maintain sound credit" and "attract equity capital." Also in the rewriting, there was added a requirement that the commission, in granting any expedited increase, must give consideration to rate provisions of the Interstate Commerce Act.

Another new provision in the proposed amendment is a paragraph requiring carriers proceeding under the bill to show in their petitions any proposed exceptions to the uniform application of the requested increases and requiring them to publish and make effective initially the full amount of any increases authorized by an interim order of the I.C.C.

cent, compared with the equivalent 1952 week.

Loadings of revenue for the week ended March 6 totaled 590,567 cars; the summary for that week, compiled by the Car Service Division, A.A.R., follows:

REVENUE FREIGHT CAR LOADINGS			
For the week ended Saturday, March 6			
District	1954	1953	1952
Eastern	103,902	127,434	139,326
Allegheny	111,480	142,328	146,732
Pocahontas	37,210	45,888	56,648
Southern	115,043	126,876	128,631
Northwestern	67,638	72,364	77,245
Central Western	102,498	112,744	114,400
Southwestern	52,796	57,230	60,130
 Total Western			
Districts	222,932	242,338	251,775
 Total All Roads	590,567	684,864	713,112
 Commodities:			
Grain and grain products	40,979	41,454	46,402
Livestock	7,154	7,330	7,597
Coal	90,768	113,393	137,081
Coke	8,405	14,582	15,785
Forest products	38,673	42,617	43,481
Ore	14,296	19,906	20,746
Merchandise l.c.l.	64,410	71,463	74,018
Miscellaneous	325,882	374,119	368,002
 March 6	590,567	684,864	713,112
February 27	595,031	668,654	755,844
February 20	618,623	689,430	682,551
February 13	623,706	681,604	737,776
February 6	624,385	690,613	733,919
 Cumulative total,			
10 weeks	6,019,423	6,744,204	7,185,231

In Canada.—Carloadings for the seven-day period ended February 28 totaled 68,093 cars, compared with 66,851 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
February 28, 1954	68,093	30,298
February 28, 1953	71,428	32,325
Cumulative Totals:		
February 28, 1954	539,033	235,671
February 28, 1953	596,715	250,935

Safety

Progress in Safety Lauded by Faricy

The safety program conducted by American industry and local and national safety groups has achieved "impressive results," William T. Faricy, president of the Association of American Railroads, said in Cleveland on March 16. Addressing the Greater Cleveland Safety Council and the Cleveland Railroad Operating Committee at a joint industrial safety dinner, Mr. Faricy added that an excellent example of progress in industrial safety was the improved safety record among railroad employees.

RR Record—Latest available reports from the railroad industry, he pointed out, show a casualty rate of less than seven for every million man-hours worked, including all types of injuries. Forty years ago, when safety work was organized on an industry-wide scale, the casualty rate was 31 for every million man-hours.

Mr. Faricy credited the improved

industrial safety record to the "four E's of safety"—engineering, education, evangelism and economics. The safety program, he pointed out, "has been carried on through research and engineering to create safe conditions of work. It has been carried on through education to define and establish right

practices. It has been carried on through safety evangelism to stimulate the right approach and spirit. And it has been carried on with regard to the economics of safety, through the investment without which safe plant and equipment could not be brought into existence."

Financial

“Battle of Century Unlimited”

Both sides of New York Central controversy aired in addresses to New York security analysts

"We want the New York Central because the job on the Chesapeake & Ohio is done. The big important things that need doing in the railroad industry can't be done by the C&O. They can be done by the New York Central."—Robert R. Young.

"A great deal has been accomplished, and the tide has been reversed. It is exactly the fact that the tide is running in that makes certain people ambitious to get aboard and ride on the crest. But on the New York Central there is only one driver's seat and no room for another."—*William White.*

New York security analysts—whose recommendations to their clients may go far to determine who controls the New York Central system after the

annual meeting of stockholders on May 26—heard the foregoing statements in the course of luncheon addresses by Messrs. Young and White on March 12 and March 15.

Mr. Young, former chairman of the board of the C&O, and present board chairman of Alleghany Corporation, is seeking to win control of the Central through stockholders' proxies, after his request for two seats on the NYC's board of directors, including the board chairmanship for himself, was unanimously rejected by the present New York Central board (*Railway Age*, February 15, page 11).

Mr. White, present NYC president, has taken the position that there can be "no compromise" with the interests Mr. Young represents, "so long as



IT'S THE PUBLIC—not the railroad—that benefits, when Norfolk & Western President R. H. Smith signs his company's federal income tax return, calling for an initial payment of \$10,800,000. That's just 45 per

cent of the N&W's total estimated federal income tax liability, and less than one-third of all its federal, state, county and local taxes — which, in 1952, came to \$37,076,000, or \$1,780 per employee.

Mr. Young himself is in the picture."

"Train X"—Railroads, Mr. Young told the security analysts on March 12, could save from \$800 million to \$1,200 million a year in operating costs, through use of roller bearings (\$200 million-\$400 million), electric brakes (\$400 million), and mechanical refrigeration (\$200 million-\$400 million). He also asserted that "Train X" would "completely eliminate" the NYC's passenger deficit. This, he declared, had risen from \$30 million in 1947 to \$50 million in 1953, the same period in which the C&O was reducing its passenger deficit from \$21 million to \$14 million by cutting out "about 50 per cent" of its passenger train mileage "with virtually no decline in gross." If "Train X" didn't work, Mr. Young added, he could "get its cost back in 30 days" by putting it on display at Grand Central Terminal and "charging 25 cents a look."

Mr. White, talking to the same group three days later on what he termed "The Battle of the Century Unlimited," disputed the value of "Train X" as a deficit reducer. He conceded that, for the full year of 1953, the Central's passenger deficit would be higher than for 1952, partly because of uncontrollable factors, but added that "during the last six months of 1953 the deficit was at a rate about \$750,000 per month under the corresponding 1952 period." His railroad, however, is continuing its joint search with the C&O, for a "cheaper-to-build" and "cheaper-to-maintain" passenger car, and the two roads "are about ready to call in car building companies to help."

Sturgis Joins NYC—Mr. White also revealed that Henry S. Sturgis, vice-president of the First National Bank of New York, had requested and obtained a leave of absence from the bank "to give full time assistance to the Central in the proxy contest involving control of the railroad."

Mr. Sturgis, appearing with Mr. White, said he had done so because "I think it would be a national calamity if Mr. Young were able to substitute his promoter-type management for the present experienced management which is making such substantial progress in the affairs of New York Central."

"No Compromise"—Mr. White's assertion that there could be no compromise was a repetition of one made at a press conference several days earlier, following a meeting with Clint W. Murchison and Sid W. Richardson, the two Texas oil men who recently purchased from the C&O 800,000 shares of NYC common stock (*Railway Age*, March 1, page 8), and who have been nominated by Mr. Young for Central directorships.

On the day following Mr. White's talk to the New York security analysts, William T. Faricy, president of the Association of American Railroads, predicted that the present management would retain control of the NYC

after the annual meeting. Speaking at a press conference in Cleveland, Mr. Faricy described Mr. White as "one of the outstanding railroad men in the country," and called attention to his "accomplishment" in "increasing the Central's revenue 37 per cent in one year."

The A.A.R. executive also characterized Mr. Young as "a stock market operator," and "not a railroad man at all," alleging, in support of this contention, that "in 1947, when dieselization was already under way on most of the nation's railroads, Mr. Young advocated that railroads be prohibited by government from making this modernization move."

Repercussions—Publication of Mr. Faricy's comments elicited further statements from Mr. Young, Mr. White and Mr. Faricy. Mr. Young charged that his attitude toward dieselization was "distorted" in Mr. Faricy's Cleveland remarks, and asserted that his objective was development of a practical coal-burning turbine locomotive. Mr. White countered with quotations from a statement by Mr. Young in 1947 I.C.C. proceedings, urging government action to compel railroads to use coal rather than oil as locomotive fuel, as being in the public interest.

Mr. Young further replied to Mr. Faricy by declaring that he is not a "Faricy-type" railroad man. He reiterated his opinion that the A.A.R. supports "horse and buggy" research and further amplified references to the so-called Western Agreement and the 1946 controversy over ownership of the Pullman Company. Subsequently Mr. Faricy issued a statement in Washington which, after quoting Mr. Young's 1947 testimony that operation of diesels was not in the public interest, went on to challenge Mr. Young's asserted leadership in adoption of freight-car roller bearings and "standardized" box cars.

Young at Press Club—In a March 11 speech at the National Press Club in Washington, D. C., Mr. Young said word had come to him from the "other side" that "they might want to make a deal" for places on Mr. Young's proposed new NYC board of directors. Mr. Young had previously announced the names of seven persons whom he would have on that board.

In the Washington speech he announced an eighth nominee—Frederick Lewisohn. He also said that the "other side" had better make their proposal by March 15 or the remaining six places would be taken.

Other parts of Mr. Young's Press Club address were in the main reiterations of statements he had previously made with respect to the NYC, its banking relationships, and the railroad industry generally. In the latter connection, he said the railroads were the "only underexpanded industry in the country." And he called the Association of American Railroads a "device to bring everybody down to the lowest level."

NYC Augments Probe Plea—Meanwhile, the NYC has asked the Interstate Commerce Commission to investigate the release from trusteeship of the 800,000 shares of NYC stock which the C&O announced it had sold to Messrs. Murchison and Richardson. The NYC request was embodied in a supplement to the petition it filed previously to ask the commission to investigate activities of Mr. Young and his corporate allies. (*Railway Age*, March 8, page 9.)

The supplemental petition asserted that the "purported sale" of the NYC stock was not for cash, and a "very substantial part" of the purchase price "remains unpaid." It went on to assert that the 800,000 shares are held in escrow to be delivered upon receipt of the remainder of the purchase price.

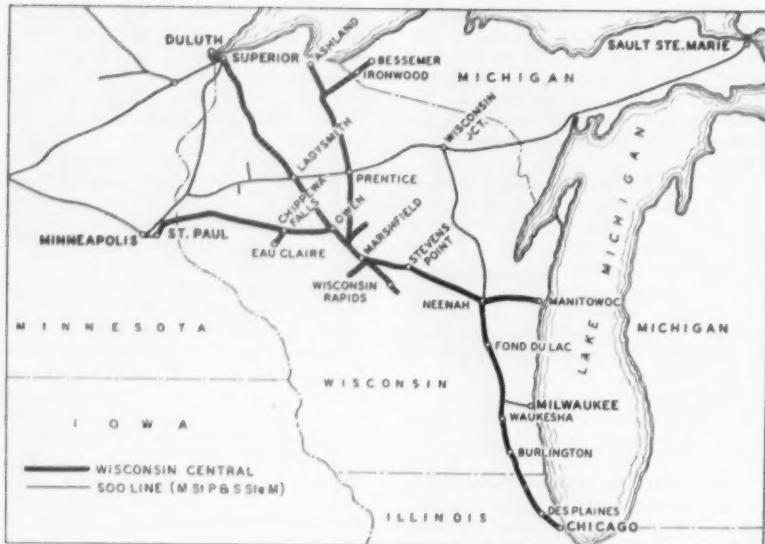
Specifically, the petition requested the commission "to make such investigation . . . as may be necessary to determine whether there is reason to believe that section 7 of the Clayton Antitrust Act has been and is being violated by the C&O's acquisition of the 800,000 shares of Central stock from the trustees which held such shares pursuant to the commission's order of June 5, 1945. . . ."

New Haven Fight Grows—The other major eastern proxy battle, for control of the New Haven, also warmed up last week, with a statement by Patrick B. McGinnis, New York banker and former board chairman of the Norfolk Southern and the Central of Georgia, that the NH had actually lost money in postwar years. Only non-railroad income enabled it to show an apparent profit, and to pay some dividends during those years, according to Mr. McGinnis, who is heading up a group of stockholders, including some of the present New Haven directors, who are trying to get control of the railroad.

His figures were disputed by Frederic C. Dumaine, Jr., present president, who contended that they made no allowance for liquid assets, or for expenditures for additions and betterments, and that they also violated Interstate Commerce Commission accounting procedures. "They won't let you run a railroad that way," he added.

Control of the New Haven will be settled at the annual meeting April 14, with stock of record March 15 eligible to vote. Mr. Dumaine, or interests closely allied with him, reportedly control directly about 30 per cent of outstanding stock.

Baltimore & Ohio—*R.F.C. Rejects Bond Bids*.—The Reconstruction Finance Corporation has rejected a bid of 85.5 which it received for \$65,000,000 of this road's collateral trust, 4 per cent bonds, series A, due January 1, 1965. The bid was submitted by Bear, Stearns & Co. on behalf of a group which included itself and 18 other firms.



Wis. Central Back in Private Hands

Twenty-two years of receivership and reorganization end as new Minnesota corporation is formed to take over properties and assets of 906-mile railroad

One of the most complex of all railroad reorganization proceedings came to an end on March 9, as Judge Gunnar H. Nordbye, sitting in federal court in Minneapolis, signed an order transferring assets and properties of the Wisconsin Central Railway Company, a Wisconsin corporation, to a new Minnesota corporation, the Wisconsin Central Railroad Company.

The road's reorganization was carried out according to a plan of the Interstate Commerce Commission, and put into effect under supervision of three reorganization managers appointed by the court to represent interested stock and bond holders. They are Henry S. Mitchell, president of the Duluth, South Shore & Atlantic; George W. Morgan, a St. Paul attorney; and Abraham Watner, a Baltimore, Md., businessman who was president of the old corporation, and spokesman for a group of preferred stockholders.

As announced briefly in the March 15 *Railway Age* (page 5), Edgar F. Zelle, who was appointed trustee during the bankruptcy, was elected president of the new corporation. Mr. Zelle is chairman of the board of the First National Bank of Minneapolis. Elected to serve with him were: Leonard H. Murray (who is vice-president and secretary of the DSS&A), vice-president; and R. R. Galligan, (who was treasurer and auditor for the trustee), vice-president of accounts and secretary-treasurer. H. E. Sidman, who was assistant treasurer and assistant auditor during the trusteeship, has been appointed assistant chief



Edgar F. Zelle

accounting officer and assistant secretary-treasurer. Mr. Mitchell was named general counsel.

Because the Wisconsin Central lines will continue to be operated by, and as a part of, the Soo Line system, the new corporation has no operating officers.

During reorganization, the trustee bought in some \$7.6 million of the old company's first general mortgage bonds at a discount with earnings of the reorganization period. The new capitalization will include some \$14.7 million of first mortgage 4 per cent bonds; \$20.4 million of contingent interest 4½ per cent income bonds; \$20.8 million of new common stock; and \$5.2 million of equipment obligations. A total of more than \$2.8 million will be paid to creditors of the old corporation.

New Facilities

C&NW Will Raise Roof

Preliminary work is under way on a program to raise the roof of the Chicago & North Western's Chicago passenger terminal train shed by approximately one foot. The additional clearance will be needed for the double-deck suburban passenger cars presently on order from the St. Louis Car Company (*Railway Age*, March 1, page 25), and for the Union Pacific's dome-type equipment being delivered by the American Car & Foundry Co. for use in joint C&NW-UP streamliner service between Chicago and the West Coast.

The roof of the train shed covers an area of about seven acres. It is expected that the work will be completed before the end of the year. After that, the road will reactivate an improvement program which was held up in 1952 in order to give priority to clearance studies for the new dome and suburban cars. This program includes resurfacing of train shed platforms, renewal of roof surfacing, and replacement of skylight glass with translucent corrugated plastic material.

Education

German Delegation Studies Railway Air Conditioning

Ten German engineers, traveling under auspices of the Foreign Operations Administration, are studying air conditioning as applied to passenger cars by American railroads. The delegation will remain in this country until April 10, visiting the New York Central; New Haven; Santa Fe; Burlington; North Western; Illinois Central; Milwaukee; Pennsylvania, and Southern.

They also are visiting plants of Edison Storage Battery Division of Thomas A. Edison, Inc.; Safety Car Heating & Lighting Co.; Carrier Corporation; Vapor Heating Corporation; W. H. Miner, Inc.; Pullman-Standard Car Manufacturing Company; Pyle National Company; Electro-Motive Division of General Motors Corporation; Westinghouse Electric Corporation; Budd Company, and Electric Storage Battery Company.

Other visits are being made to the American Federation of Labor; Association of American Railroads; American Council on Education; U.S. Department of Labor; District Director of Internal Revenue, and Foreign Operations Administration.

The opening meeting, held March 1, at New York, was addressed by Alfred G. Oehler, electrical editor, *Railway Age* and *Railway Locomotives*

and Cars; J. J. Kennedy, vice-president, sales, Safety Car Heating & Lighting Co., and H. J. Schickedanz, assistant manager, Vapor Heating.

The trip is being conducted by Theodore G. Markow, project engineer. The visitors are: Gunther Wiens, director, mechanical engineering division, German Federal Transport ministry; Helmut Baur, special assistant to president, German Federal Railway; Friedrich Behrens, chief engineer, Pintsch-Electro G.M.G.H.; Werner Duch, chief engineer, Mas-

chinenfabrik Augsburg-Nurnberg A.G.; Kurt Friedrich, director, design and construction diesel rail cars, German Federal Railway; Gunther Hoffman, engineer, W. Lahmeyer & Co.; Karl Kaissling, consulting engineer, Vereinigte Leichtmetall-Werke G.M.G.H.; Paul Kochling, manager and technical director, Hagenuk, vorm. Neufeldt & Kuhnke; Wilhelm Schenck, chief engineer, planning and design, Brown, Boveri & Cie., A.G., and Friedrich von Schutz, chief engineer, Pintsch Bamag A.G.

Traffic

"1953 Wasn't Normal" — Seitz

Many of its "all-time highs" stemmed from "economically unsound and wasteful causes," UP vice-president cautions Pacific Coast board

"We should recognize that the condition we have come to accept during much of the past 15 years as 'prosperity' has had its basis or stimulus in war—either production for war itself, or to fill demands which wartime shortages created," Ambrose J. Seitz, executive vice-president of the Union Pacific, told members of the Pacific Coast Shippers Advisory Board.

Speaking at San Diego on March 12, Mr. Seitz said this "prosperity" was founded on "destruction rather than construction," and that it was done with borrowed money rather than earned money, i.e., at the expense of a continually increasing national debt. "Any change from such an underlying motivation must be for the ultimate good," he continued, "because real prosperity must be built upon constructive production and consumption—not upon destruction and economic waste."

"The shooting in Korea has ceased; expenditures for defense are being reduced and the cost of government is coming down. That means some loss of production, employment and income, but I feel certain that the relatively minor adjustments produced by such a change are welcomed by thankful hearts everywhere."

Comparisons Misleading — "We should keep constantly in mind that comparisons throughout 1954 will be made against 1953 with its record of 'all-time highs' in many cases and nearly so in most others—notwithstanding the fact that those peaks may have been due to economically unsound and wasteful causes, such as war, and paid for with funds borrowed from many generations in the future. Thus the comparisons are not against normal standards, but against record standards. Any inferences or conclusions so drawn should be tempered accordingly."

"In many quarters the feeling about 1954 is already much better than it was even as short a time as one month ago. At the risk of sticking my neck out, I am going to make a prediction: Within the next six months we will be back on an upward trend in business generally."

No Crystal Ball — Mr. Seitz said railroad men are not trained economists "nor do they have any crystal ball for making such predictions." Most of the information upon which such forecasts are based comes from the combined experience of the traffic men who make up the shippers' advisory boards. "If our predictions for 1954 hold true—and for the first two months they are right on the nose—our company will end 1954 about five per cent under the all-time high of 1953," he stated, adding: "That is not bad, all things considered."

Two Months to Go — Speaking at a Cleveland press conference on March 16, four days after Mr. Seitz' San Diego address, William T. Faricy, president of the Association of American Railroads, expressed the opinion that "little relief" was in sight "for at least two months."

Parmelee Sees Good Year For Railroads in 1954

Dr. J. H. Parmelee, consulting economist to the Association of American Railroads, has painted a not-so-bad picture of railroad traffic and earnings for 1954.

"Railroad freight traffic seems likely to run below that of 1953 until June or July, but after July will be comparable to the . . . corresponding period of 1953," Dr. Parmelee said in a March 11 speech.

"My guess on ton-miles would be a ten per cent decrease for the first half

of the year, and in the second half a level closer to or even exceeding that of the second half of 1953," he declared.

The former A.A.R. vice-president and director of the Bureau of Railway Economics predicted little change in the "declining rate" of passenger traffic in 1954. He spoke of an overall drop of 5 per cent, with prospects for a slight upturn toward the end of the year.

Dr. Parmelee spoke at a dinner meeting of the Eighth Rail Transportation Institute of American University, Washington, D.C. His short-term railroad outlook was based on a national productive prospect which seems "by no means as dark as some have painted it."

Earnings Outlook — Financial results in 1954 will be affected by prospective lower levels of traffic and by settlement of pending labor demands for increased wages and fringe benefits. Dr. Parmelee said increased operating efficiency will lighten the burden of increased costs but may not add up to the total of such costs.

"Railroads can hardly hope," Dr. Parmelee continued, "to earn so great a net in 1954 as in 1953."

The former A.A.R. officer went on to say, however, that rail carriers should continue large-scale improvements to plant and equipment, both in view of the defense build-up and to maintain their competitive position.

Competition — Further inroads on rail traffic by competitive transportation seem likely to continue through 1954. According to Dr. Parmelee, this situation results from opportunities afforded other agencies of transport through "unequal regulation, government assistance and unequal taxation."

Looking at long-range railroad prospects, Dr. Parmelee said demand for transportation service "seems destined to continue upward, perhaps at an accelerating rate."

He said distribution of aggregate demand among all agencies of transport presents a challenge to the railroads, but he believes greater operating efficiency and closer attention to the service features of rail transportation will help win the competitive struggle.

Competitive Transport

AAR's Beatty Calls Mail Diversions "Uneconomical"

Recent moves of the Post Office Department to divert mail from the railroads to air lines and trucks have been called "uneconomical and not in the public interest" by Albert R. Beatty, assistant vice-president of the Association of American Railroads.

Speaking March 16 at Prairie View Agricultural and Mechanical College, Prairie View, Texas, Mr. Beatty de-

clared that taking all factors into account, no other form of transportation can equal the overall economy of the railroads in transporting mail. He warned that "any substantial diversion of mail from the railroads . . . cannot help but add to railroad deficits and thereby weaken that transportation system on which the general public must rely."

Boosts Time-Lag Bill—On March 18 at Texas Southern University, Houston, Texas, Mr. Beatty delivered

another address, advocating prompt Congressional action on pending time-lag legislation to provide for prompt rate increases as carrier costs rise.

Such legislation, he said, "is in the public interest because the nation can have strong railroads only if they are able to take in enough money to keep themselves physically strong. This cannot be done if rate adjustments are so long delayed that they fail to keep pace with the railroads' increased costs of doing business."

Washington, D.C., where he received his LL.B. degree in 1934; and at Harvard Law School, where he was awarded an LL.M. in 1938.

A Practitioner—Before becoming one of its members, Mr. Knudson had appeared before the commission in several cases. He was commerce counsel for the secretary of agriculture, and represented that official in numerous rate proceedings.

His appointment to the commission in 1950 was for a short term. It was the remainder of the term of the late Commissioner Carroll Miller, who had died in office.

People in the News

Knudson Will Leave I.C.C.

Tells President of plans to end government service, which also includes assignment as D.T.A. administrator

Interstate Commerce Commissioner James K. Knudson, who is also administrator of the Defense Transport Administration, has advised President Eisenhower of his intention to leave government service. He is willing to stay until his successor takes over, "assuming this can be done fairly soon."

This was revealed March 15 when Mr. Knudson made public a March 10 letter which he wrote to the President. On the following day, he made public the President's reply—a March 15 letter which said: "Of course, we are sorry that you feel you must leave government service, but understand your reasons for making this decision."

Mr. Knudson has been a member of the commission since April 1950. His term expired December 31, 1953, and he has been serving since that time under provisions of the Interstate Commerce Act which leave a commissioner in office until his successor qualifies. Among those prominently mentioned for the next vacancy on the commission has been Everett Hutchinson of Austin, Tex.

The D.T.A. Job—Mr. Knudson's assignment as administrator of the D.T.A. came to him in September 1950, when the commission's Bureau of Service was placed under his jurisdiction. Meanwhile, former President Truman had delegated his defense transportation authority to "that commissioner of the Interstate Commerce Commission who is responsible for supervision of the Bureau of Service of the commission."

In his letter to the President, Commissioner Knudson expressed his gratitude to those who have recommended his reappointment. He went on to note that he has been in government service 24 years, adding that he "must now give serious thought to the best welfare" of his family.

"From a monetary point of view," the commissioner continued, "that can

best be accomplished by my leaving government, which I intend to do, and accept one of several outstanding offers."

Then came Mr. Knudson's offer to remain on the job until his successor qualifies. He also said he would "always stand ready to offer my services to the government on emergency call as they may be needed in the future."

President's Letter—After the expressions of regret and understanding of the commissioner's decision, the



James K. Knudson

Eisenhower letter went on to express the President's "deep appreciation" of Mr. Knudson's "fine service to the nation." The President also said:

"You have served with the commission's Defense Transport Administration during trying days, and have made an outstanding contribution in your field of work. Thank you for your offer of further assistance. We shall keep it in mind."

Mr. Knudson was born January 6, 1906, at Brigham City, Utah. He was educated at the University of Utah; at George Washington University,

In Congress

Ettenger Says Roads Can't Take Higher Pension Taxes

Organized labor's plan for liberalizing railroad retirement and unemployment benefits "would increase the taxes payable by the railroads beyond their ability to pay and far beyond any similar payment exacted from any other industries, including their competitors."

That's what R. L. Ettenger, Jr., assistant vice-president of the Association of American Railroads, told the House Committee on Interstate and Foreign Commerce at a March 16 hearing on the union-sponsored bill.

The bill is H.R.7840, introduced by the committee's chairman—Representative Wolverton, Republican of New Jersey. (*Railway Age*, February 22, page 13.) It was explained and supported at earlier sessions of the hearing by A. E. Lyon, executive secretary of the Railway Labor Executives' Association. Mr. Lyon said he also spoke for the four train and engine service brotherhoods which are not members of R.L.E.A.

The payroll tax increases assailed by Mr. Ettenger would result from the bill's proposal to raise the maximum compensation that is taxable from \$300 to \$350 per month. He pointed out that the higher unemployment taxes would be paid by the railroads alone while they shared with employees the burden of the higher retirement levies.

Mr. Ettenger added that the railroads, faced with reduced traffic, "are in no position to pay additional taxes." Other testimony designed to show that the carriers are faced with marked declines in traffic was presented by another AAR assistant vice-president—Graham E. Getty.

A.A.R. and N.I.T.L. Urge Repeal of Freight Tax

Repeal of the three per cent tax on amounts paid for freight transportation has been urged in presentations made to the Senate Finance Committee by J. Carter Fort, vice-president and

general counsel of the Association of American Railroads, and William H. Ott, Jr., chairman of the National Industrial Traffic League's Legislative Committee.

The presentations also urged repeal of the 15 per cent tax on fares. They were made at a March 16 hearing the committee was holding on H.R.8224, the House-approved bill which would cut the fare tax to 10 per cent.

A Burdensome Levy—Arguments made against the freight tax by Messrs. Fort and Ott included contentions to the effect that it is compounded in that it is reassessed on repeated movements of the same property; that it taxes a necessity; that it imposes a heavy burden on the long-haul shipper; and that it places for-hire carriers at a competitive disadvantage because it does not apply to private transportation.

Of the fare tax, Mr. Ott said it should be repealed to promote passenger travel and thus lessen the railroads' passenger deficit "to the benefit of the users of property transportation who now carry that deficit."

In his attack on the fare tax, Mr. Fort urged that, if not repealed, it should at least be reduced to its initial rate of 5 per cent. "The successive increases above that level, first to 10 per cent and then to 15 per cent," he said, "were imposed for the deliberate purpose of discouraging civilian travel by train . . . under the conditions of World War II—a purpose being accomplished under present conditions to the detriment of the public interest."



IRON ORE SHIPMENTS from Quebec-Labrador mines to the St. Lawrence River port of Seven Islands, over the new 357-mile Quebec, North

Shore & Labrador, are scheduled to begin this summer. The railroad tracks reached Schefferville, their northern terminus, on February 13.

they do, the trucks will take that business, too."

"Preposterous" was what the colonel had to say of suggestions that all troops could be moved by air in the event of war.

He assigned to government the responsibility for supplying and maintaining the defense portion of the railroad car fleet. That would be the portion required over and above the fleet which would meet the needs of "high level" commercial activity and which would be the responsibility of the railroads. The government cars would be available for lease or sale to the railroads.

"National Calamity" — Colonel Johnson said the present fleet was on the high-level-commercial basis but inadequate for mobilization. "It's a national calamity," he added.

In another part of his address, the I.C.C. chairman said he had no serious objection to legislation such as that embodied in the pending time-lag bill to insure prompt rate increases as carrier costs rise. At the same time he pointed out that the commission beat the proposed legislation's 60-day time limit in the latest general rate case. "The bill might have had something to do with that," the colonel added.

B&O and PRR Cut Some Roundtrip Coach Fares

Cuts of about one-third in roundtrip coach fares between Philadelphia and Pittsburgh and between Washington, Baltimore and Pittsburgh will be inaugurated April 15, the Pennsylvania and the Baltimore & Ohio have announced jointly. The new fares, which also will apply on trips to and from most principal intermediate points, are being introduced experimentally "in an effort to get more passengers

on the trains," spokesmen for both railroads said. The new fares will be in effect until next September 30, "giving us an adequate opportunity to test public response."

The new tickets, good in coaches on all trains, will permit stopovers en route in either direction. Return portion of the roundtrip may be made any time up to 30 days from date of purchase. Children under 12 years of age may travel at half the new fares.

Organizations

Small Shipments Group Elects Harry Gillis

Harry E. Gillis, executive secretary of the Southern Traffic League, Washington, D.C., has been elected executive secretary of the National Small Shipments Conference. Mr. Gillis will handle business of the conference from his office in Washington.

Meeting in Chicago, the conference also expressed approval of the examiner's proposed report in the I.C.C.'s I. & S. docket M-4462, which recommended cancellation of a \$1.50 surcharge which had been applicable on truck shipments of less than 5,000 pounds in Central States (motor) territory. In its stead, Examiner James J. Williams proposed a \$1 minimum charge for pickup and delivery service.

Walter W. Coe, transportation specialist, U. S. Marine Corps, was elected president of the **Traffic Club of Washington, D. C.**, at the club's annual meeting March 16. Other officers chosen are: first vice-president, J. C. Batham, general agent, Santa Fe; sec-

Rates & Fares

Rail Rate Problem Must Be Solved—Col. Johnson

Chairman J. Monroe Johnson of the Interstate Commerce Commission warned last week that there must be developed a rate structure which will maintain the railroads in health and vigor.

That problem is worrying students of transportation, Colonel Johnson also said. Meanwhile, the former director of World War II's Office of Defense Transportation had asserted that "there is only one mass transporter—the railroads. They've got to stay here. You can't go to war without them, for war is mass transportation."

The commission chairman spoke March 15 in Washington, D.C., before the class of the American University's Eighth Rail Transportation Institute. He posed the rate problem in this way:

"Truckers take the cream and leave the railroads to move such things as coal, lumber and wheat, which move at the lowest rates. What will the railroads live on except to put up the prices on such traffic? And if

ond vice-president, Arthur V. Krone, chief, Traffic Division, Reconstruction Finance Corporation; secretary-treasurer, E. R. Shellenberger, district freight agent, Northern Pacific.

Securities

Chicago & Eastern Illinois. — *Short-term Notes.* — This road has asked the I.C.C. for authority to pledge, as needed, \$1,244,000 of first mortgage bonds as security for short-term notes. The C&EI said it plans to use short-term notes from time to time over the next three years to help provide cash for meeting equipment obligations.

Chicago Great Western. — *Competitive Bidding Exemption.* — The I.C.C. has dismissed, at the road's request, a special application in which the Great Western asked for authority to sell privately \$6,000,000 of collateral trust bonds (*Railway Age*, December 28, 1953, page 15). The road asked to withdraw its application in view of a possible change in plans for refinancing existing bank loans and raising additional working capital.

Applications

DURHAM & SOUTHERN. — To issue a \$300,000 note to the Fidelity Bank, Durham, N. C., to provide funds for purchase of three 1,200-hp. diesel road-switcher units from Baldwin-Lima-Hamilton Corporation. The units will cost an estimated \$119,263 each, a total of \$357,789. The note, with interest at 4 per cent, would mature over a 10-year period.

EVERETT RAILROAD. — To issue and sell 2,000 shares of \$25 par common stock, proceeds from

which will be used to acquire a 4.4-mile segment of rail line at Everett, Pa. The segment, a part of the Huntingdon & Broad Top Mountain, connects the town of Everett with a line of the Pennsylvania at Mt. Dallas. The Huntingdon has obtained I.C.C. authority to abandon its entire line, and the Everett Railroad was organized to acquire and operate the Everett-Mt. Dallas segment.

TEXAS & PACIFIC. — To assume liability for \$1,240,000 of series "O" equipment trust certificates, to finance in part 250 box cars costing an estimated \$1,700,000. The cars will be built in T&P shops at a unit cost of approximately \$6,800. The certificates, dated April 15, would mature in 19 annual installments of \$124,000 each, beginning April 15, 1955. They would be sold by competitive bidding, with the interest rate to be set by such bids.

Authorizations

ILLINOIS CENTRAL. — To assume liability for \$6,000,000 of series "38" equipment trust certificates, to finance in part 50 diesel units costing an estimated \$8,402,760 (*Railway Age*, February 8, page 80). Division 4 approved sale of the certificates for 99.16, based on interest at 2½ per cent, which will make the average annual cost of the proceeds to the road approximately 2.63 per cent. Winning bid for the issue was by Halsey, Stuart & Co. and 10 associates. The certificates, dated as of March 1, will mature in 30 semiannual installments of \$200,000 each, beginning September 1, 1954. They were reoffered to the public at prices yielding from 1.25 to 2.725 per cent, according to maturity.

NEWBURGH & SOUTH SHORE. — To issue to the United States Steel Corporation an unsecured promissory note for \$450,000, proceeds of which will be used to refund an existing note of \$200,000 and provide additional working capital. Interest on the new note will be 4 per cent if earned.

Dividends Declared

CHICAGO & EASTERN ILLINOIS. — common, 25¢, payable April 15 to holders of record April 1; Class A preferred, \$2, payable 50¢ quarterly, beginning April 15.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC. — \$1, payable April 9 to holders of record March 20.

DOVER & ROCKAWAY. — \$3, semiannual, payable April 1 to holders of record March 31.

KALAMAZOO, ALLEGAN & GRAND RAPIDS. — \$2.95, semiannual, payable April 1 to holders of record March 15.

MAHONING COAL. — \$10, payable April 1 to holders of record March 22.

PITTSBURGH & LAKES ERIE. — \$1.50, quarterly, payable April 15 to holders of record March 19.

ST. LOUIS SOUTHWESTERN. — \$5, annual, payable March 29 to holders of record March 22.

SPOKANE INTERNATIONAL. — 25¢, quarterly, payable April 1, July 1, October 1 and December 15, to holders of record March 18, June 15, September 15, and December 1, respectively.

Security Price Averages

	March 16	Prev. Week	Last Year
Average price of 20 representative railway stocks	61.26	62.17	69.47
Average price of 20 representative railway bonds	94.36	94.24	94.63

Equipment & Supplies

PASSENGER CARS

20 More Dome Cars Ordered By Union Pacific

With 15 dome passenger cars already on order from the American Car & Foundry Co., the Union Pacific has just added to that order an additional 20 cars, bringing the total investment to approximately \$10 million.

Briefly . . .

. . . A "Chessie Club" lounge service for coach passengers between Cincinnati and Newport News has been inaugurated on the Chesapeake & Ohio's "George Washington." Located in the middle of the train, the lightweight streamlined lounge car, to be known as "The Chessie Club" will serve refreshments as well as food. In early evening, while the regular diner is in operation, the "club" will serve refreshments only. From then until midnight it will serve both refreshments and light snacks.

The added equipment includes 10 observation dome cars, five dome coaches and five dome dining cars. Previously ordered (in March 1953) were five cars of each of these three types. When delivered, the new cars will be assigned to the "City of Los Angeles" and the "Challenger" between Los Angeles and Chicago (via C&NW from Omaha) and to the "City of Portland" between Portland, Ore., and Chicago. All the cars will feature domes of a new design that has single curved glass side sections without horizontal obstructions. Deliveries are scheduled to begin in November, and will continue into the second quarter of 1955.

Five of the dome coaches and an equal number of the dome observation cars will be assigned to "Challenger" service—one car of each type to each of the five train sets. The "City of Los Angeles" will get a dome diner and a dome observation car on each of the five train sets, while the "City of Portland" train sets will carry one car of each of the three types.

The dining cars will have a private 10-seat dining room, plus accommodations for 18 additional passengers, in the lower level. The dome will offer dining facilities for an additional 18 passengers, with tables for four on one side of the car and tables for two on the other. The chair cars will have 36 reclining leg-rest seats in the lower level—16 at one end of the car and 20 at the other. The 24 dome seats will be angled 10 degrees toward the outside for easier viewing. They will be for use of all coach passengers and will not be sold. A private game room seating six will be located at the forward end of the observation cars. The lower level will have a cocktail lounge seating nine and the observation portion will seat 21. The 24 dome seats will be of a sofa type.

The cars are to be built at A.C.F.'s St. Charles, Mo., Plant.

FREIGHT CARS

The North American Car Corporation has ordered 275 40-ton refrigerator cars from the Pacific Car & Foundry Co. for delivery starting in August.



HOTELS ON WHEELS are operated by the Swedish State Railways, in cooperation with the Swedish Tourist Association, for the benefit of ski enthusiasts. Completely equipped with sleeping, dining, parlor, shower, staff, kitchen, provision and ski cars, the trains make six-day tours, moving by night to give their "guests" different skiing territory each day. Somewhat similar trains are operated for tourists in the summertime, and for school children during vacation periods.



To make vacationing
in CANADA
even more wonderful

14
new passenger cars
built by
PULLMAN-STANDARD
for





"NEW STANDARDS OF COMFORT NEW PLATEAUS OF PLEASURE"

The C. N. R. is changing "travelling" into "travel living"—all over the system, including the Grand Trunk Western. The new, smooth riding, beautifully outfitted, modern, comfortable cars will be in operation by the time the vacation traffic reaches its peak. Every principal train on the system will have been provided with its share of new equipment.

The vanguard of the 141 new Canadian National passenger cars, built by **PULLMAN-STANDARD**, reached the Montreal yards in January, on schedule.

All of the new cars are being delivered, on schedule, at the rate of five per week.

The sleeping cars are made up of various combinations of Pullman-Standard "S" type accommodations. Of the total, 52 cars have *four* sections, *eight* duplex roomettes, and *four* double bedrooms; 20 cars have *six* roomettes, *four* double bedrooms, *six* sections; 6 cars have *ten* roomettes and *five* double bedrooms; 6 cars have *five* compartments and *three* drawing rooms.

A new departure in *meal service* is provided by 6 dinette cars, offering counter service for twenty-six persons at a sitting. Other dining and lounge accommodations are provided by:

4 sleeper-grill cars (eight sections, one double bedroom and a sixteen chair dining room), 6 buffet-sleepers (ten sections, one double bedroom), 8 buffet-lounge cars (two double bedrooms, two compartments), 2 buffet-lounge cars (seven compartments), 9 parlor-grill cars, 2 buffet-parlor cars, 6 parlor cars and 14 diners.



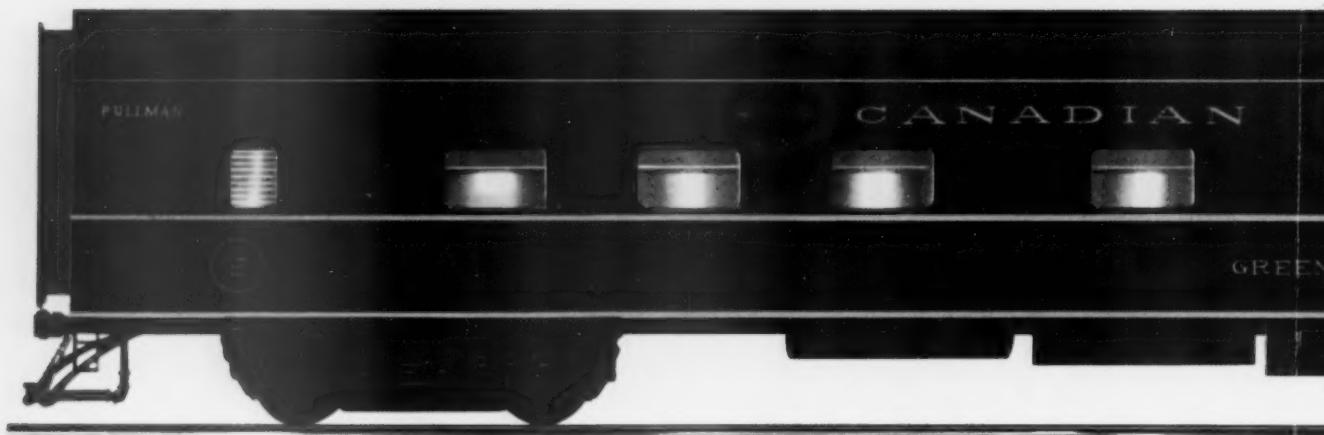
how
travelling
becomes
"Travel
Living" for
Canadian
National
patrons



The sections, located at the end of the car, have easy-riding foam rubber cushioning. Each seat is wide enough to accommodate two people comfortably. The improved folding arrangement assures ample leg room between the seats. For night use a patented folding ladder is attached to each upper berth permitting easy access and exit, even without the assistance of a porter.



The Roomette and duplex roomette, for single occupancy, have new conveniences. In the roomette, the folding bed, narrowed at the foot end, can be lowered or raised with the door closed. Finger-tip control, with the *Pullman-Standard* counter-balance mechanism makes operation easy and convenient. Individually controlled heat and air conditioning add to the comfort of the individual passengers.

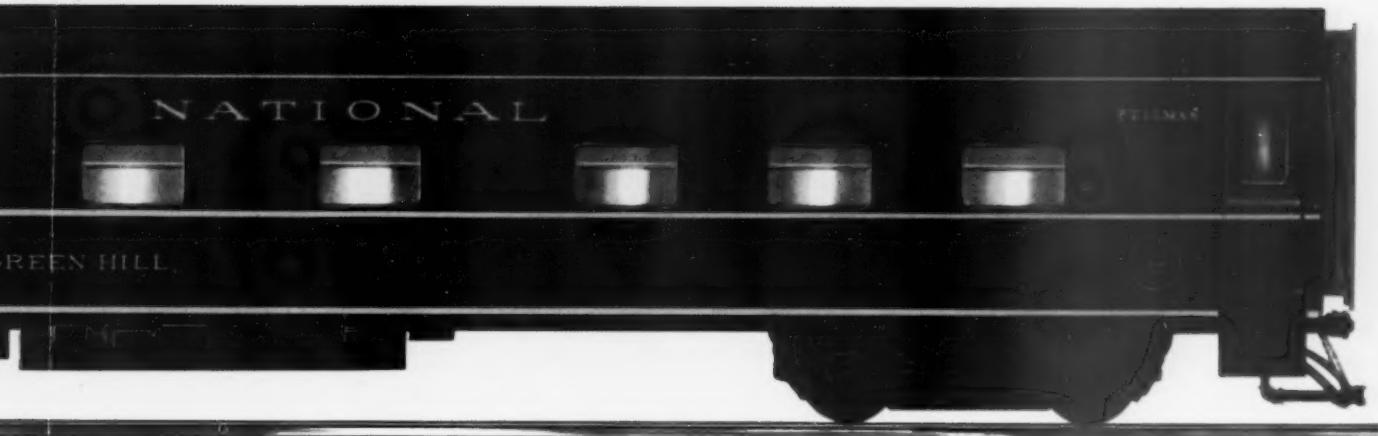




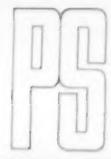
In the "S" type double bedrooms, berths completely disappear and two comfortable folding arm chairs are provided for daytime use. Maximum privacy is assured by enclosed toilet. It is separated from wash basin permitting individual use of each. As illustrated on the preceding fold, an en suite arrangement is made possible by folding the rigid, sound-deadened partition.



The car plans for "S" type accommodations are such that groups of units can be arranged in virtually any desired combination without requiring major engineering or manufacturing changes. The unlimited possibilities in fabrics and paint colors and in individual accessories permit a variety of decorative treatments for any degree of luxury, from the sections to the drawing rooms.



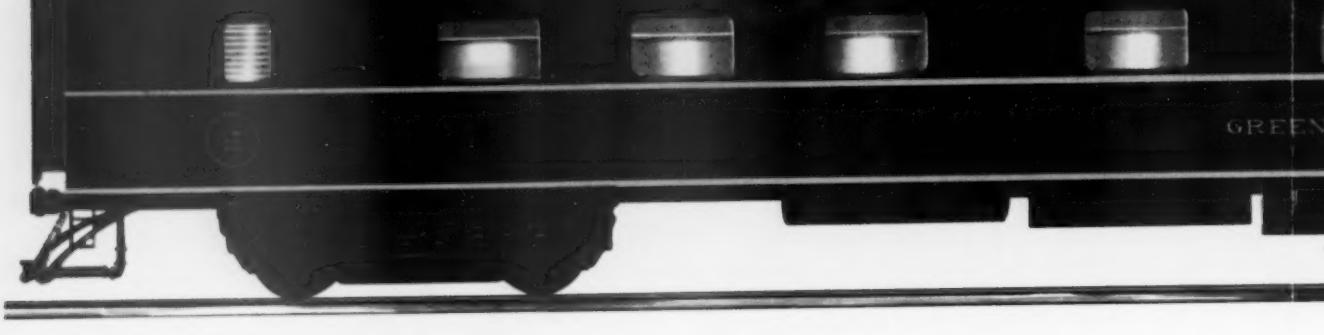
ONE OF THE 141 NEW CANADIAN NATIONAL PASSENGER CARS BUILT BY PULLMAN-STANDARD



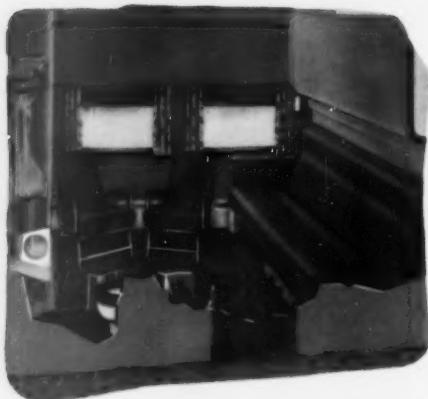
PULLMAN

CANADIAN

GREEN



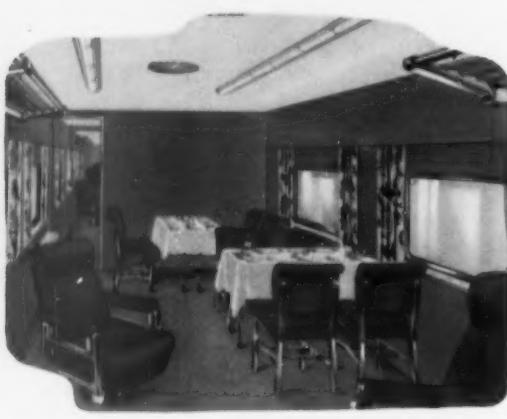
The compartments have a convertible sofa, upper berth, folding chair, enclosed toilet facilities.



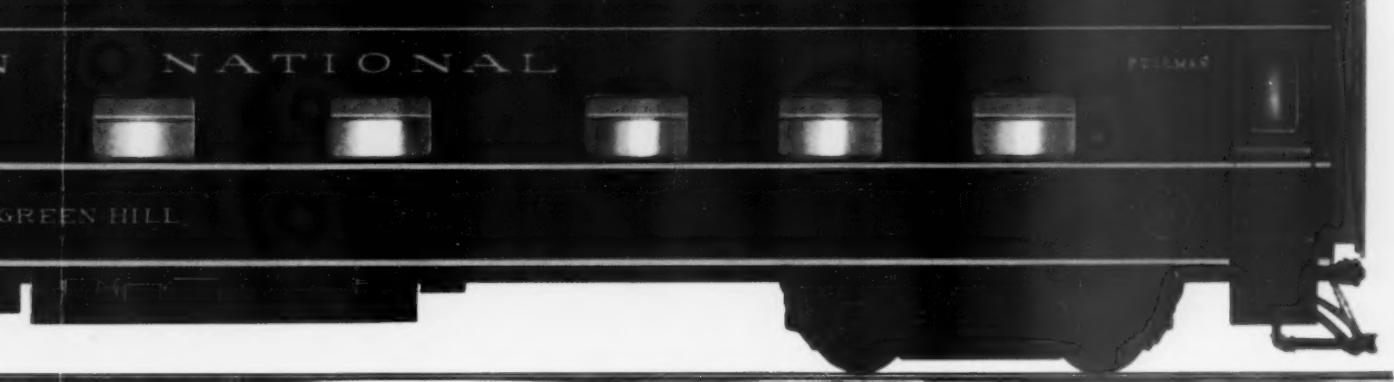
The beautiful drawing rooms provide spaciousness by day—restful comfort by night.



Attractive dinettes provide comfortable seating for twenty-six persons along a gleaming counter.



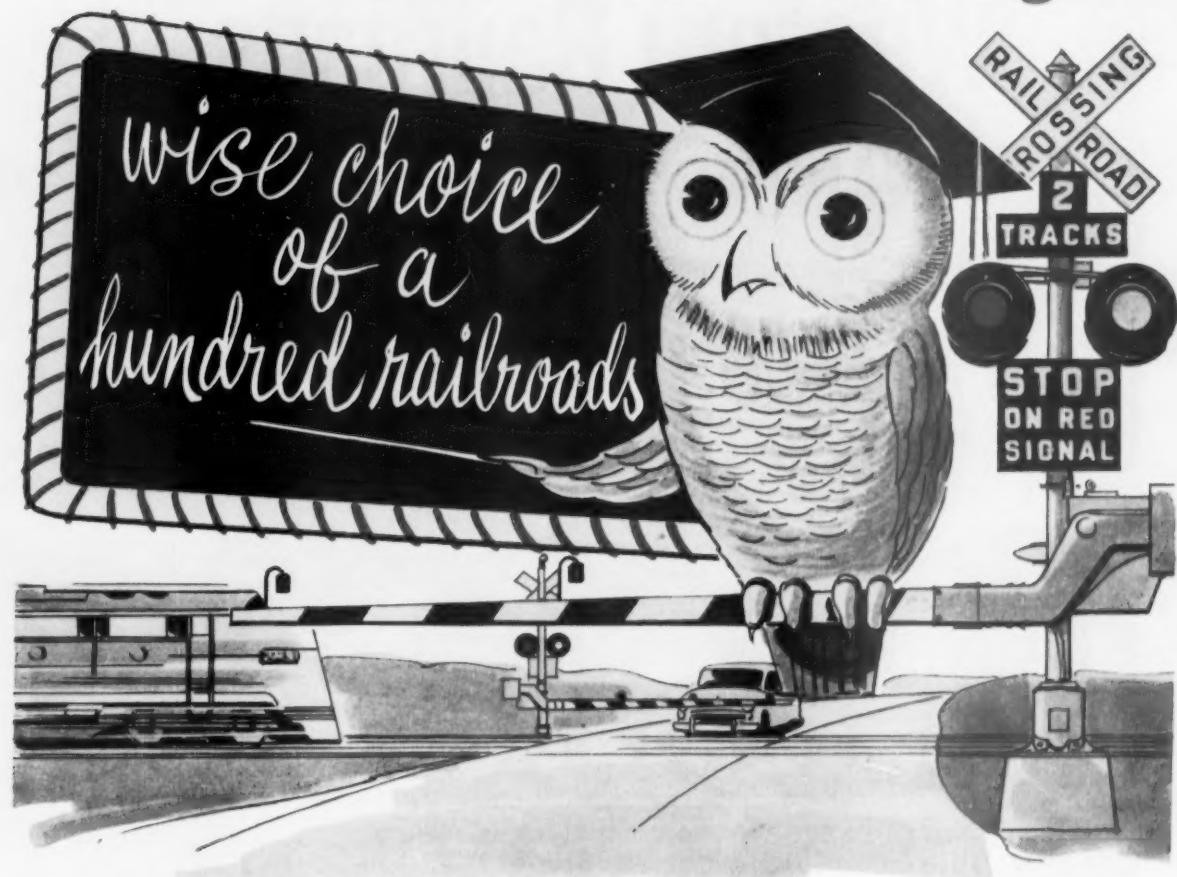
Tastefully appointed buffet and grill combination cars combine travelling comfort, dining facilities.



ONE OF THE 141 NEW CANADIAN NATIONAL PASSENGER CARS BUILT BY PULLMAN-STANDARD

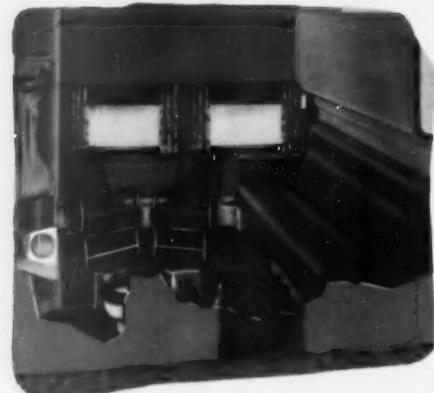


Model 10 Automatic Signals





The compartments have a convertible sofa, upper berth, folding chair, enclosed toilet facilities.



The beautiful drawing rooms provide spaciousness by day—restful comfort by night.

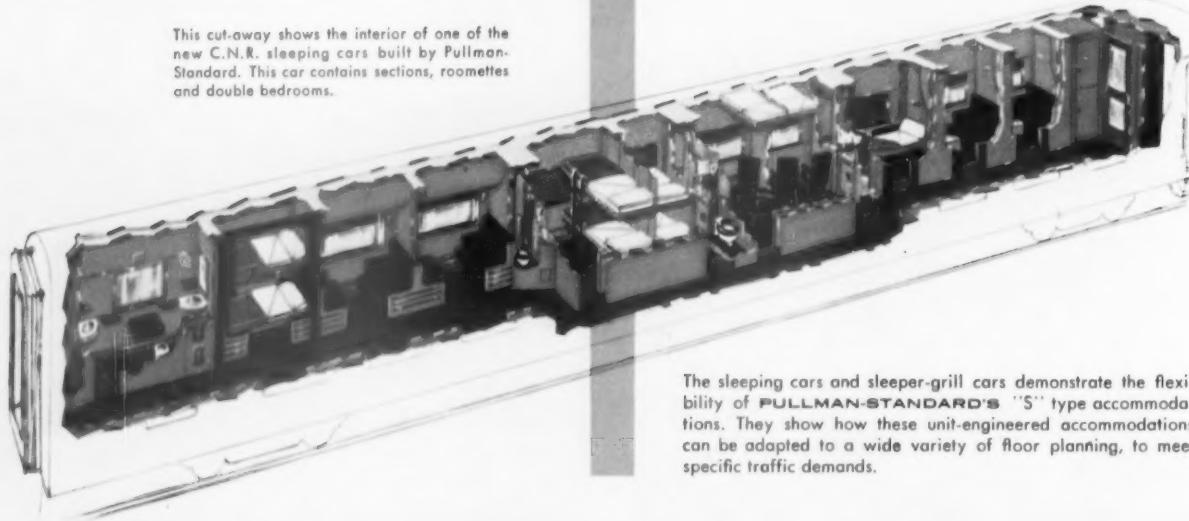


Attractive dinettes provide comfortable seating for twenty-six persons along a gleaming counter.



Tastefully appointed buffet and grill combination cars combine travelling comfort, dining facilities.

This cut-away shows the interior of one of the new C.N.R. sleeping cars built by Pullman-Standard. This car contains sections, roomettes and double bedrooms.



The sleeping cars and sleeper-grill cars demonstrate the flexibility of PULLMAN-STANDARD'S "S" type accommodations. They show how these unit-engineered accommodations can be adapted to a wide variety of floor planning, to meet specific traffic demands.

PULLMAN-STANDARD

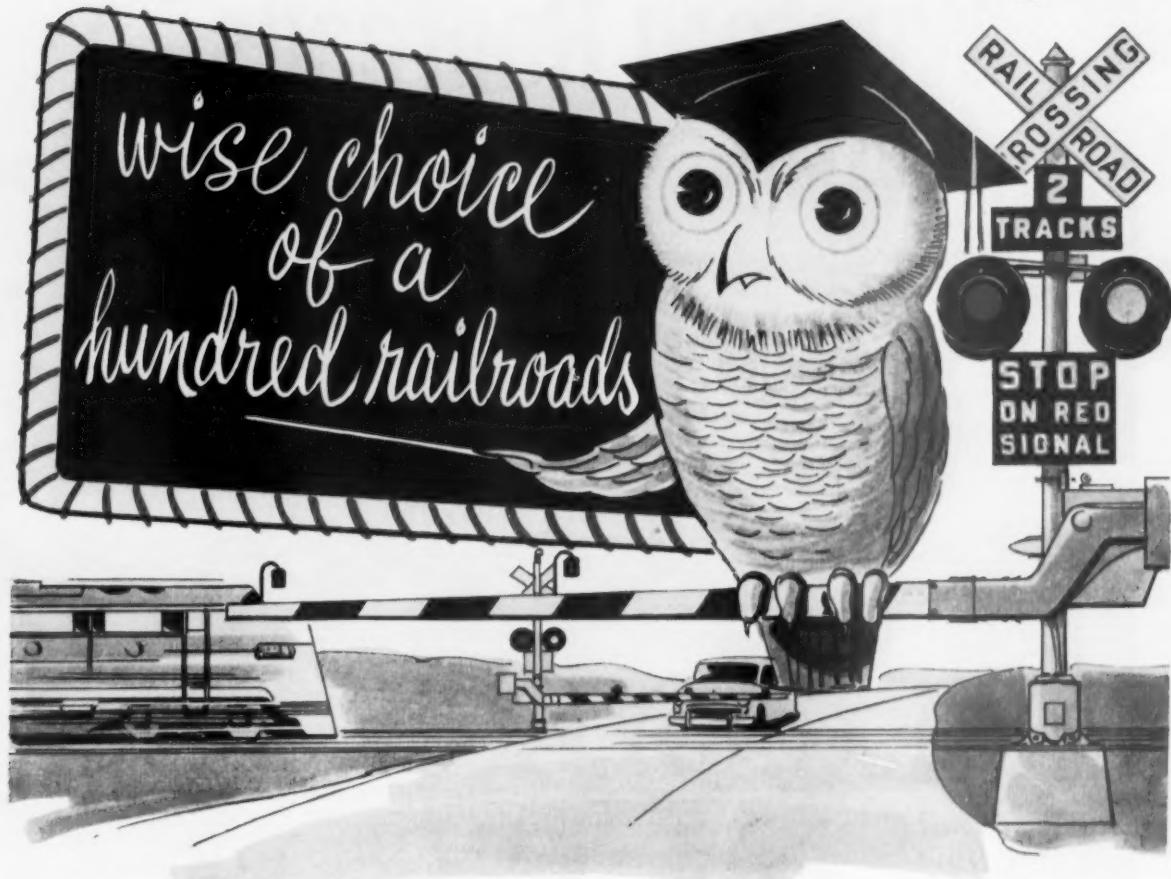
CAR MANUFACTURING COMPANY

SUBSIDIARY OF PULLMAN INCORPORATED

79 EAST ADAMS STREET, CHICAGO 3, ILLINOIS

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO, WASHINGTON

Model 10 Automatic Signals



PERFORMANCE-WISE Model 10 Automatic Signals have established an accident prevention record unequalled by any other safety device: *Not a single accident has ever occurred as a result of operation failure on the part of these signals.*

COST-WISE Model 10 installations add up to true economy. Their initial cost is low and their operation cost is small. Cost analyses prove that Model 10's are the "best buy" in grade crossing safety, year-in, year-out.

Find out why Model 10 Automatic Signals are the top choice of traffic experts everywhere. Write for complete information. Ask for "Grade Crossing Safety is Your Business." Request Brochure No. 748-RA-354



WESTERN RAILROAD SUPPLY COMPANY

General Offices and Factory.
2428 SOUTH ASHLAND AVENUE • CHICAGO 8, ILLINOIS

Not merely to sell; but to serve well . . . not only to make good products; but to make them still better . . .

Western Railroads-

CARRIERS OF THE PRODUCTS OF

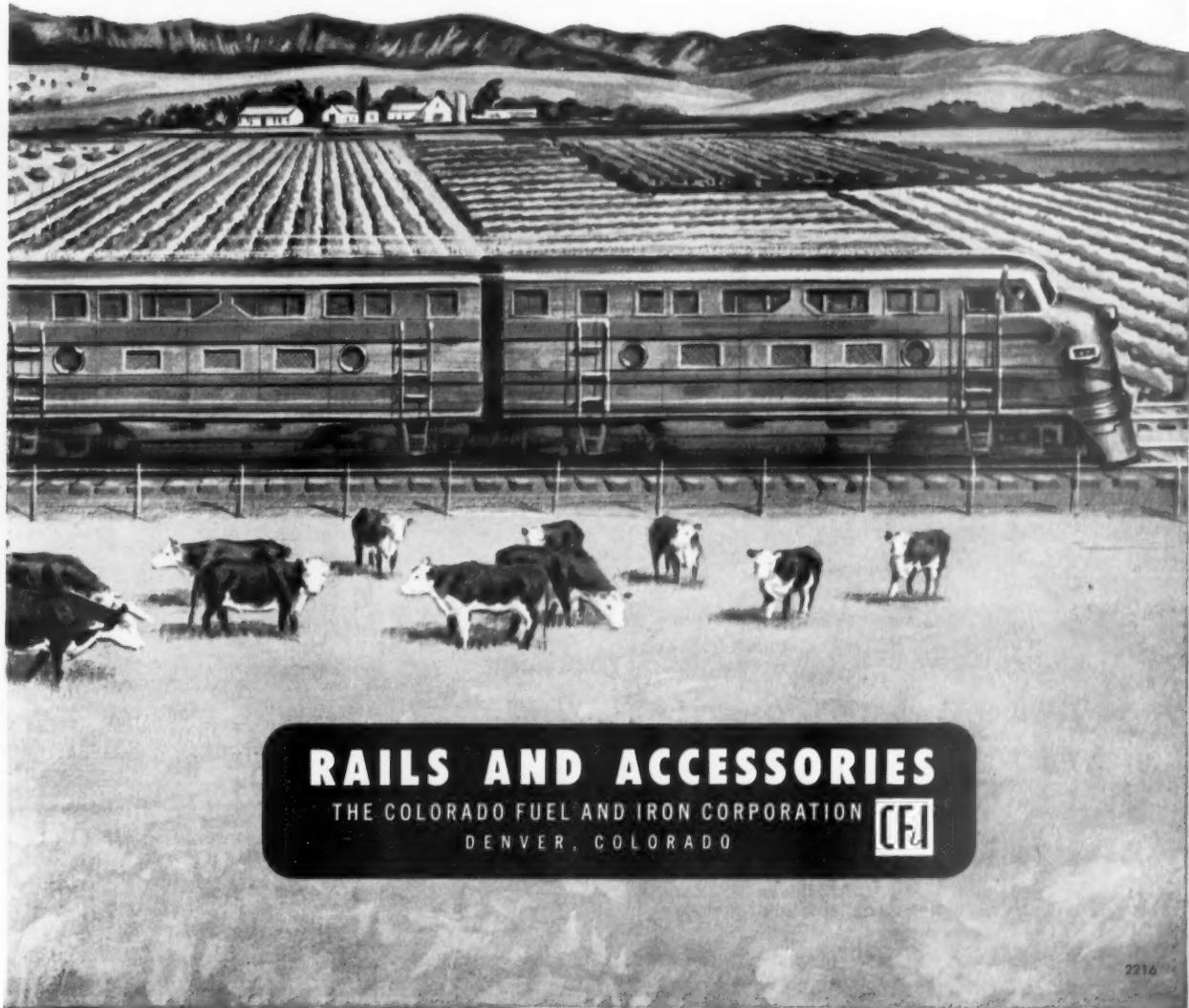
The "little dogie" of the cowboy's ballad "gits along" nowadays on steel rails at high speed. In an unending flow the agricultural products of Western farms and ranches are carried to market over a vast and efficient network of Western rail lines.



not only to fill today's requirements; but to anticipate tomorrow's—these are the aims that constantly guide C F & I.

WESTERN FARMS AND RANCHES

C F & I is proud of its pioneering association with the railroads that serve Western agriculture. C F & I shares the confidence of these great railroads in the continued and rapidly expanding growth of Western agriculture.



RAILS AND ACCESSORIES

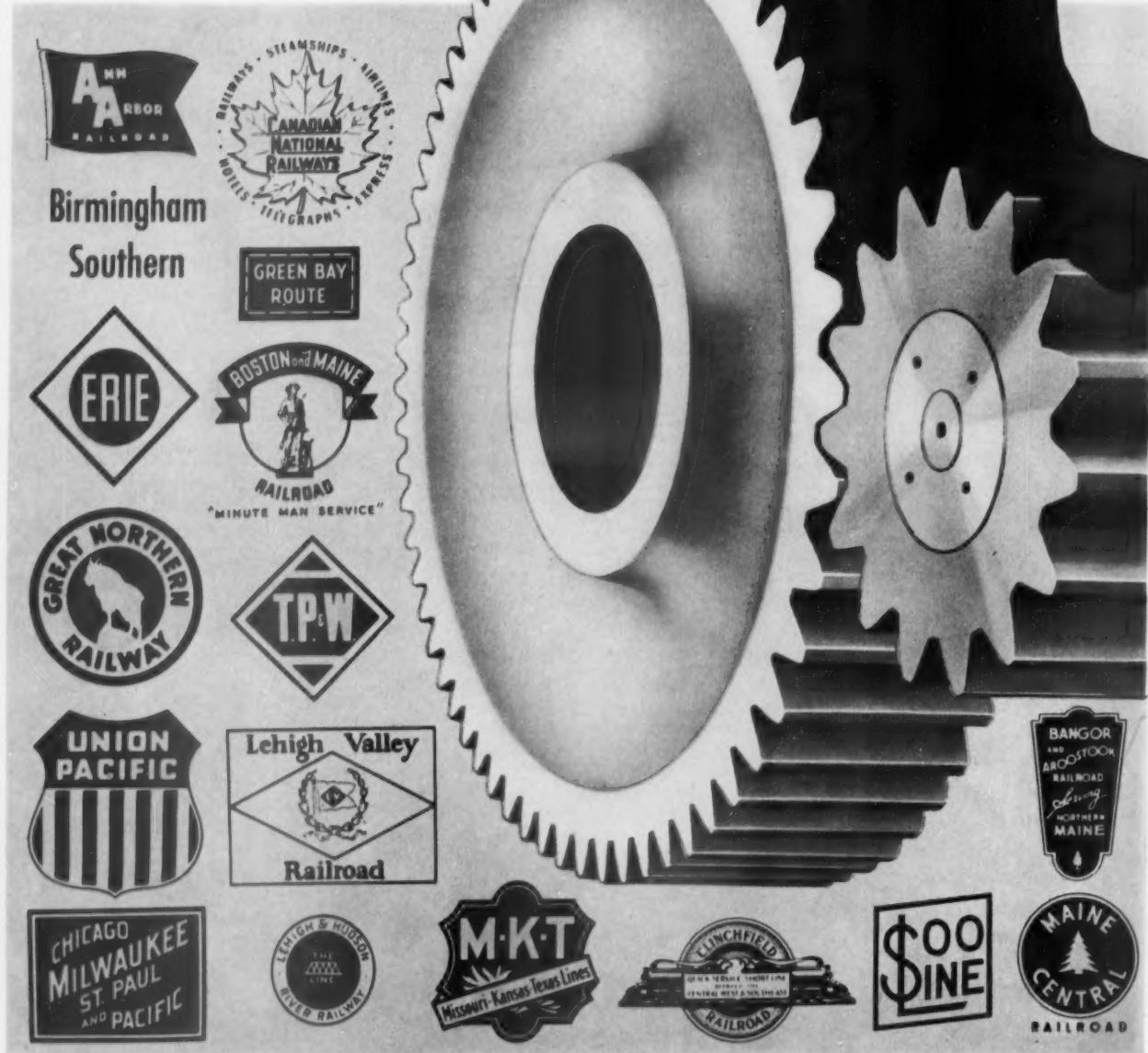
THE COLORADO FUEL AND IRON CORPORATION
DENVER, COLORADO



2216

For Diesel Traction Motor Gears...

SINCLAIR JET



LUBRICANT-TM

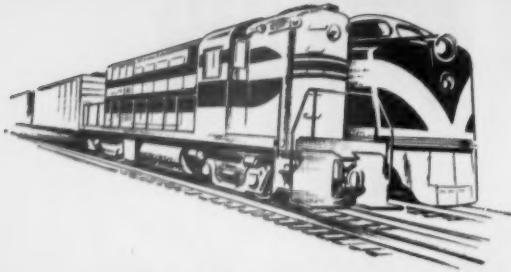


Since its introduction in 1952, Sinclair JET Lubricant—TM has reached that acme of acceptance where it is now being used by many of the nation's most prominent railroads. The emblems shown represent only part of the total number of railroads using this All-Year Lubricant. Actually, *more than 70 railroads are using JET Lubricant—TM*. Isn't it time you, too, investigated the advantages of this top quality railroad lubricant?

Contact Sinclair Refining Company,
Railway Sales
New York, Chicago, St. Louis, Houston

SINCLAIR
RAILROAD
LUBRICANTS

Outstanding benefits of the Exide-Ironclad



for diesel starting

When you specify an Exide-Ironclad Battery, you are assured of:

Quick breakaway and fast acceleration of engine to firing speed . . . high power reserve at all times for operation of control equipment . . . high availability—uninterrupted on-line service . . . low costs of operation, maintenance, depreciation . . . inherent safety . . . clean, quiet, vibrationless operation.

Rugged Exide-Ironclad Batteries are available in interchangeable sizes for diesel-electric locomotives of every make.



Type MV-17-D Exide-Ironclad Battery
—284 ampere hours—for cranking switch-
ing locomotives of 600 hp and larger.



Type MV-25-D Exide-Ironclad Battery
—426 ampere hours—for cranking road
locomotives of the larger sizes.

WHEN IT'S AN EXIDE-IRONCLAD YOUR DIESELS START

YOUR BEST
BATTERY BUY
AT ANY PRICE

Here's the Inside Story of the EXIDE-IRONCLAD Battery

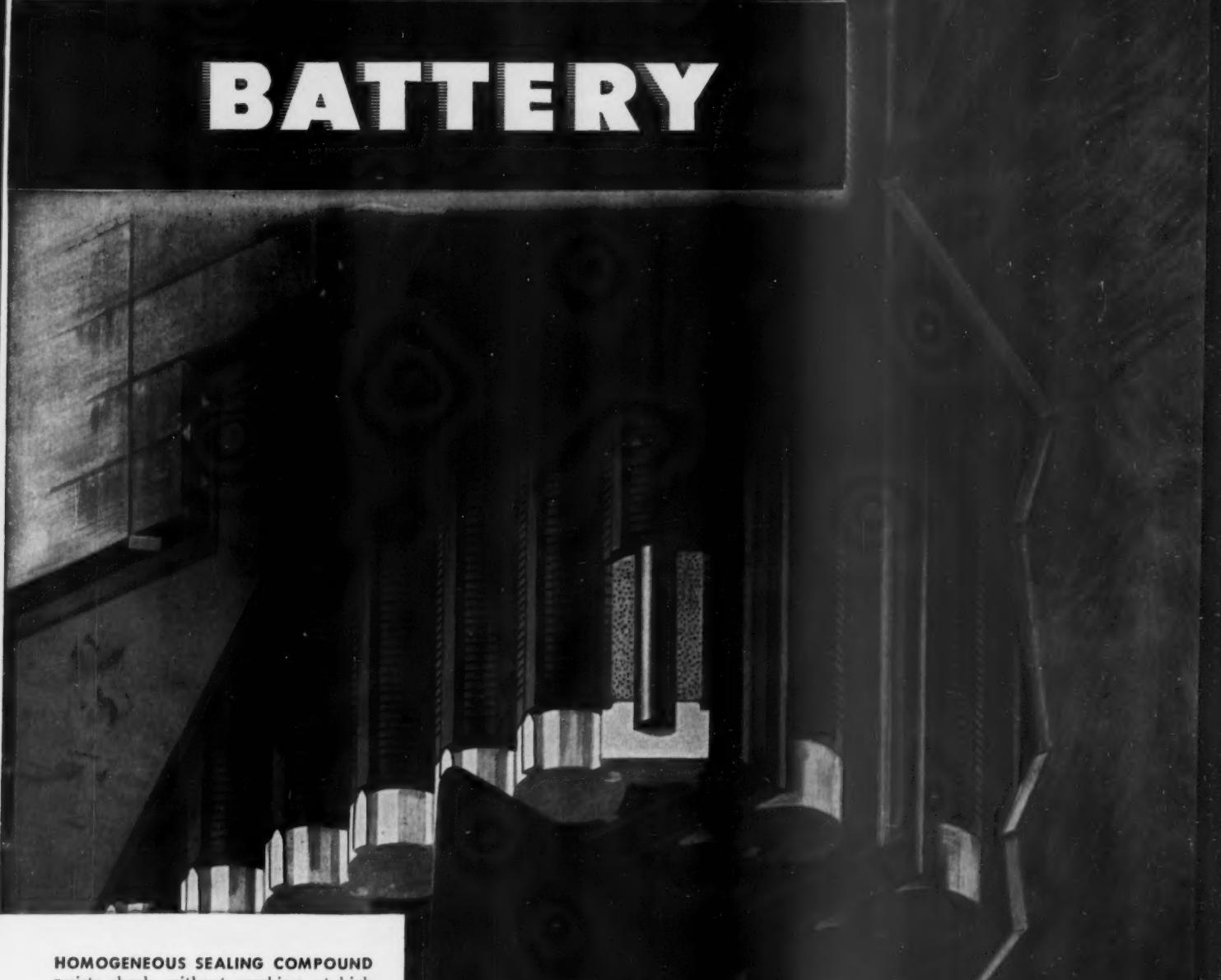
Inside . . . where it counts most . . . EXIDE-IRONCLAD is entirely different from any other battery. It's made that way by the exclusive IRONCLAD slotted tube construction . . . a principle that provides direct operating-hour savings for you.

POSITIVE PLATE SPINES cast with the heavy top bars, are of SILVIUM, which resists corrosion—contributing to longer battery life.

SLOTTED TUBES retain active material in contact with spines, yet permit the electrolyte to penetrate through the active material.

POLYETHYLENE TUBE SEALER. This acid-proof plastic sealer fits snugly into the bottom of positive plate tubes, sealing in the active material for a longer working life.

BATTERY



HOMOGENEOUS SEALING COMPOUND
resists shock, without cracking, at high
or low temperatures. Forms a permanent
seal between container and cover.

NEW QUARTER-TURN PLASTIC VENT PLUGS.
Made of unbreakable polyethylene. Can
be quickly and easily removed to add water.

Exide-Ironclad batteries in a wide variety
of types and sizes are also available for
car lighting, air conditioning and for
battery-electric trucks.

Moving ahead...
with the right power to stop





CANADIAN NATIONAL RAILWAYS

*For safe, sure stopping power,
brakes on all the new Canadian National
cars are built to service-proved
Simplex® standards.*

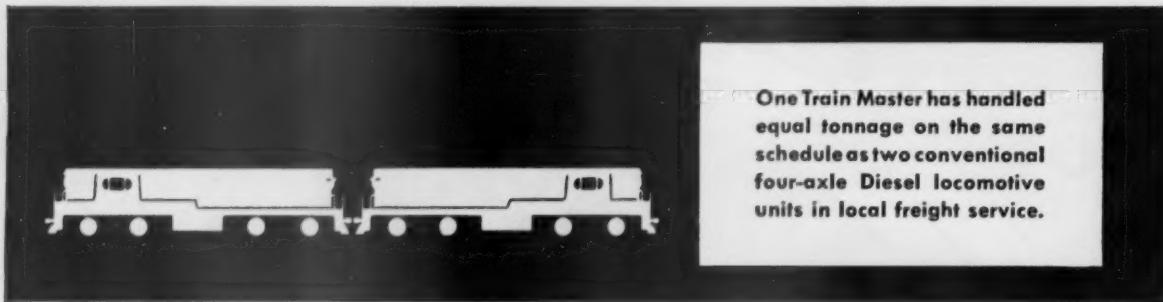


AMERICAN STEEL FOUNDRIES

410 North Michigan Avenue, Chicago 11, Illinois

Canadian Sales: International Equipment Co., Ltd., Montreal

in Local freight service



One Train Master has handled equal tonnage on the same schedule as two conventional four-axle Diesel locomotive units in local freight service.

for a given weight on drivers

Train Master costs 5%-10% less than other motive power units.

... hauls 5% more tonnage where adhesion is determining.

imposes 11% less vertical bending moment in the rails.



your soundest motive power investment is in

TRAIN MASTER

... leader in today's trend toward more powerful ...
more useful Diesel motive power.

Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Illinois



FAIRBANKS-MORSE

a name worth remembering when you want the best

DIESEL LOCOMOTIVES AND ENGINES • RAIL CARS AND RAILROAD EQUIPMENT • ELECTRICAL
MACHINERY • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAMMER MILLS • MAGNETOS

TYPE F COUPLER & YOKE

COUPLER F-70

YOKE Y-45

FOLLOWER Y-46

DESIGN FEATURES

- ① New Safety Shelf—to support mated coupler in event of pullout.
- ② Interlocking—Guard arm and aligning wings similar to type H Coupler.
- ③ Reduced free slack.
- ④ Improved positive anti-creep.
- ⑤ Easier operation.
- ⑥ Increased strength.
- ⑦ Reduced wear.
- ⑧ Coupler, Yoke, Follower, and Striker interchangeable as a group with present standards.

STRIKING CASTING

With Precompressed Flexible Coupler Carrier



Ask for Bulletin No. 202

THE BUCKEYE STEEL CASTINGS COMPANY

New York, N. Y.

Columbus, Ohio

Chicago, Ill.

WHATEVER YOUR NEEDS . . .

There's a U·S·S Wrought to save you



U·S·S One-Wear Wrought Steel Wheels deliver more ton-miles per dollar than any other type wheel. And for two obvious reasons. For one thing, they are made of steel, whose inherent properties combine sufficient hardness to resist wear, sufficient strength to withstand heavy loads, and sufficient ductility to minimize sudden brittle fractures. Next, this fine combination of properties is improved by forging, rolling and control-cooling the wheel, which imparts to the steel a high degree of soundness.

The above factors result in a wheel that is far stronger, safer, more durable and more economical than ordinary wheels—one that will last 200,000 to 300,000 miles in normal freight car service. In addition to the extra mileage, U·S·S One-Wear Wrought Steel Wheels offer other money-saving advantages. A car rolling on U·S·S One-Wear Wrought Steel Wheels spends more time in service, and less time on a repair siding. Consequently, maintenance costs go down and greater car revenue can be realized.

One-Wear Wrought Steel Wheels are far lighter than ordinary wheels, too. Eight Wrought Steel Wheels under a 50-ton capacity car will save approximately 1,520 lbs. of unsprung weight, which can be directly converted into additional pay-load capacity. Or it can mean a savings in fuel due to the decreased load. Greater safety, longer service, higher mileage, less weight . . . all at lower cost.

U·S·S Wrought Steel Wheels available:

One-Wear Freight Car Wheels

Steam Locomotive Wheels

Multiple-Wear Freight Car Wheels

Electric Locomotive Wheels

Passenger Car Wheels

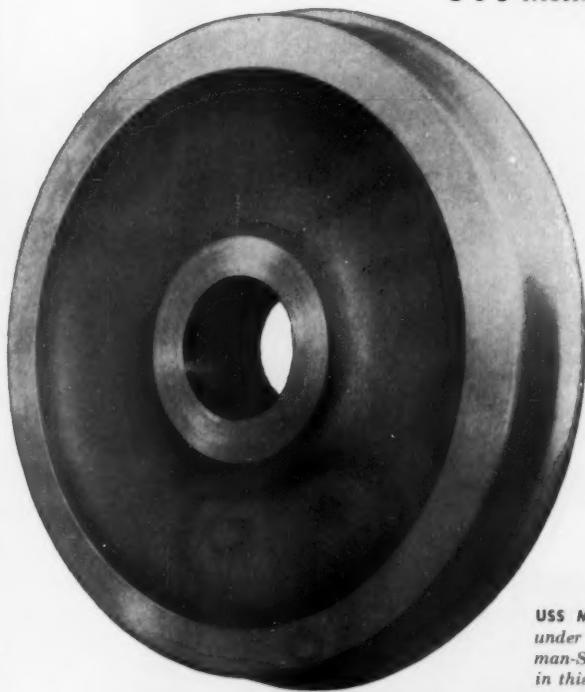
Tender Truck Wheels

Diesel Locomotive Wheels

Electric Transit Wheels

Crane Track Wheels

Steel Wheel TIME and MONEY



U·S·S Multiple-Wear Wrought Steel Wheels are designed for the toughest jobs to be found on American railroads. Manufactured under the same exacting process that is used in the production of U·S·S One-Wear Wrought Steel Wheels, but with the added advantage of extra wearable tread, there are no wheels quite so well prepared for heavy loads, hard braking, high speed impacts, and countless miles of service as U·S·S Multiple-Wear Wrought Steel Wheels.

U·S·S Multiple-Wear Wrought Steel Wheels are produced for all types of railroad applications, including Diesel locomotives, electric and steam locomotives, passenger, express, and heavy-duty freight cars.

There are two strategically located complete wheel shops to fill your orders for both U·S·S Multiple-Wear and U·S·S One-Wear Wrought Steel Wheels. The McKees Rocks (Pittsburgh), Pennsylvania shop serves the East and Southeast, and the Gary, Indiana shop supplies the Western and Southern Lines.

USS MULTIPLE-WEAR WROUGHT STEEL WHEELS will be used under 53 of the new passenger cars now being built by Pullman-Standard for the Canadian National Railways. (Described in this issue of RAILWAY AGE.)



U·S·S WROUGHT STEEL WHEELS

UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.



COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U N I T E D S T A T E S S T E E L



Over the Reading Company eastern rail network engine and maintenance crews see and learn train operation from this instruction car. It has all controls used in a Diesel locomotive, and air brake and electrical equipment. All are fully operative. In this completely self-sustaining car electrical energy is supplied by a Waukesha 33.75 KVA Diesel Enginator, with a Static Exciter Unit for field excitation, voltage regulation, and starting battery charging.

Millions of Miles of
Built-in Experience
on More than 40
Major American Railroads



Diesel Enginator, 33.75 KVA AC

...on this Air Brake and
Diesel Instruction Car
WAUKESHA
Diesel ENGINATOR®
supplies electrical energy

A complete power package ...

Waukesha 33.75 KVA, 220-volt, 3-phase AC Diesel Enginator is a Diesel engine and alternator unit ... complete, compact, self-contained ... assembled in a steel chassis, suspended by cushion mounting (rubber in shear) from tubular tracks attached to car frame ... easily withdrawn for routine inspection, servicing or exchange. Inner car mounting is also available. The Waukesha heavy-duty railway-type full Diesel engine drives the alternator through a fluid drive coupling. Send for Bulletins.

236

RAILWAY DIVISION **WAUKESHA MOTOR COMPANY** WAUKESHA, WIS.
Largest Builders of mobile engine-driven Refrigeration and Generator Equipment

for

**CANADIAN
NATIONAL
RAILWAYS**

new

passenger cars...

Edgewater

multiple-wear

Rolled Steel Wheels

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Edgewater
Steel Company

PITTSBURGH, PA.

Makers of Rolled Steel Wheels

for



Freight
Cars



Passenger
Cars

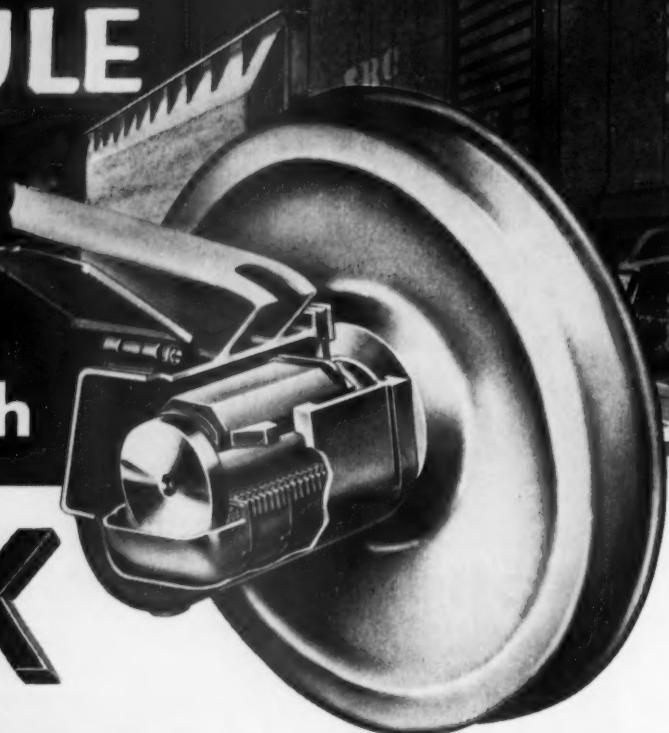


Diesel
Locomotives

COOL IS THE RULE

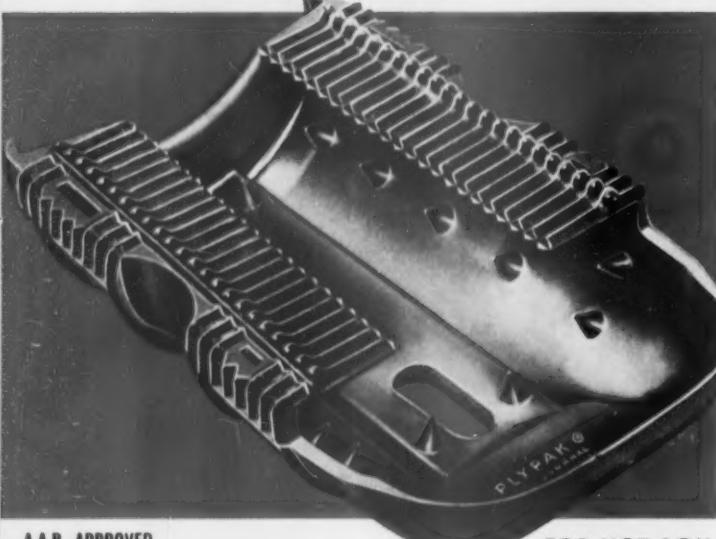
when journals
are packed with

PLYPAK WASTE RETAINER



SPECIFY PLYPAK FOR HOT-BOX PREVENTION

You may confidently count on complete elimination of hot-boxes due to lubrication failures when journals are equipped with PLYPAK and packed according to A. A. R. Lubrication Manual specifications. The record, to date, shows a marked reduction in the incidence of hot-boxes after the application of PLYPAK Waste Retainers. PLYPAK not only holds waste firmly in place, but also further contributes to proper lubrication by elimination of glazing and by functioning to keep the waste constantly saturated with clean oil and separated from dirt and residue.



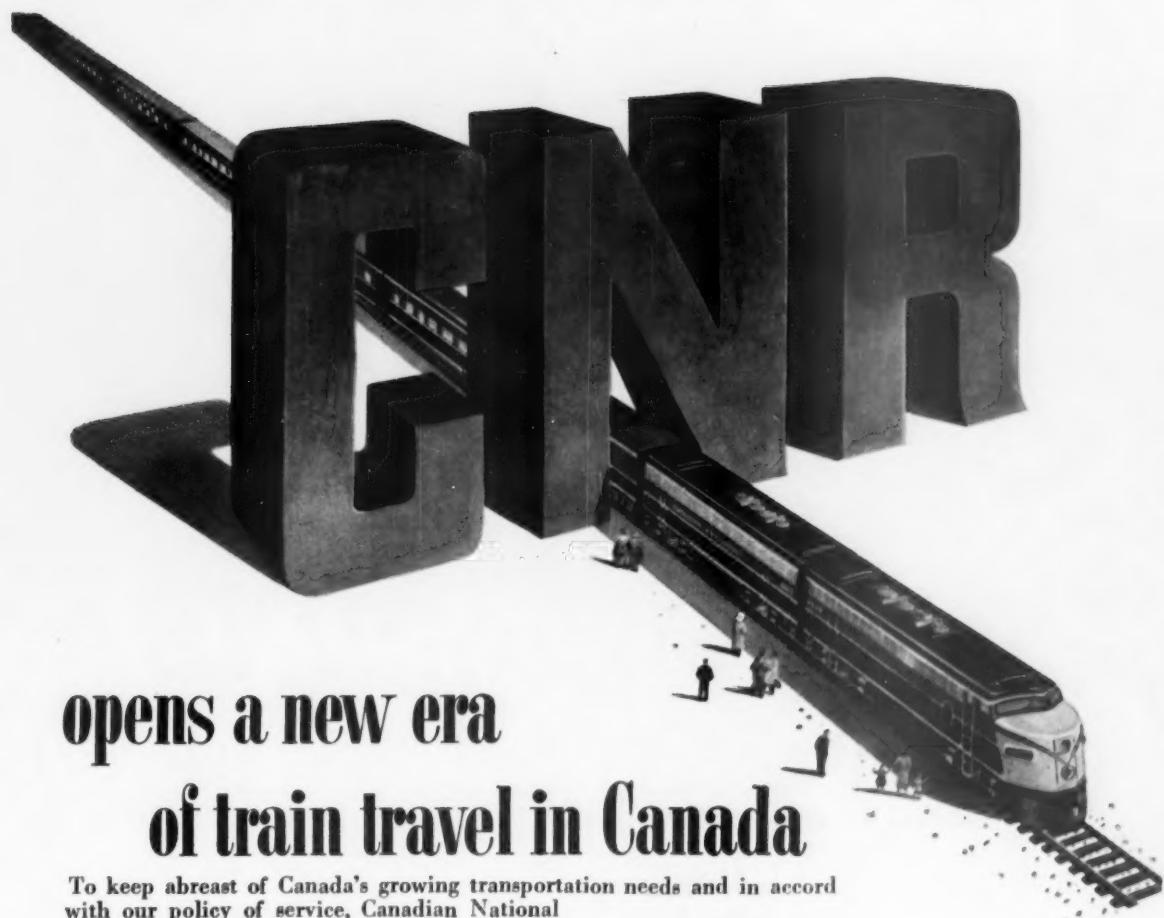
A.A.R. APPROVED
FOR UNLIMITED
USE IN INTERCHANGE

FOR HOT BOX PREVENTION SPECIFY PLYPAK. YOUR INQUIRY INVITED

WAUGH EQUIPMENT COMPANY

420 LEXINGTON AVENUE, NEW YORK 17, N. Y.

CHICAGO — ST. LOUIS — CANADIAN WAUGH EQUIPMENT COMPANY, MONTREAL



opens a new era of train travel in Canada

To keep abreast of Canada's growing transportation needs and in accord with our policy of service, Canadian National is now well advanced on a huge expansion program.

From the Canadian Car & Foundry Company Ltd. it is taking delivery of 218 smart modern coaches; from Pullman-Standard Car Manufacturing Company, Canadian National has ordered 141 sleeping, parlor, dining and dinette cars.

All of this new equipment will be in operation this summer on Canadian National trains throughout Canada.

With new purchases, Canadian National is increasing its fleet of diesel locomotives to 543, and freight cars to 120,856.

Lengthening of signal systems, enlargement of yards, building of new lines, are all part of this modernization program.

If you are interested in enlarging your present Canadian plant or establishing a new one, Canadian National's Dept. of Research and Development, staffed by experts, will gladly make prompt, confidential analyses for you, without obligation. Offices in New York and

Detroit, and at 360 McGill St., Montreal, Que.



359

MODERN CARS FOR CANADIAN NATIONAL TRAVELLERS

THE ONLY RAILWAY
SERVING ALL TEN PROVINCES

Functional Modern Comfortable

CAN-CAR IS DELIVERING **218** FIRST CLASS COACHES
TO THE CNR MODERNIZATION PROGRAMME

THE largest passenger equipment order ever placed by the Canadian railways is now on its way to the Canadian National Railways system.

Aimed at providing the utmost in practical, comfortable travel service, the new cars embody technical advances and refinements that make for maximum safety and rideability.



Mr. Donald Gordon, Chairman and President Canadian National Railways, delivering address to directors, officers and Can-Car guests on the occasion of the acceptance of the first car on January 7th, 1954.

OUTSIDE-INSIDE

new cars are modern and practical
for country-wide service

The all-steel bodies of these 80-passenger coaches are streamlined, stabilized and insulated. The green, gold and black exteriors—with red Maple Leaf monogram—suggest the comforts provided in the cars' interior.

The coaches are mechanically air-conditioned—controlled for comfort in every detail. Mounted on roller bearings on "Commonwealth" trucks, with all-coil springs and shock absorbers, the cars are remarkably smooth riding. The deep roomy seats have foam rubber cushioning while the lighting system is both restful and pleasing. Walls and ceilings have a permanent finish. There is no paint or varnish whatever—an important point in the matter of maintenance cost. From coach end to coach end everything has been designed to assure a level of passenger comfort unexcelled on any railway.

Can-Car is proud to be part of this railway modernization picture—the biggest production job of its kind ever undertaken by one manufacturer on this continent. Can-Car is meeting delivery schedules, and will reach a production peak of two of these ultra-modern Canadian National coaches every day.



CANADIAN CAR & FOUNDRY CO. LIMITED

Canada's Largest Manufacturers of Railway Rolling Stock and Equipment

Head Office: Montreal, Canada

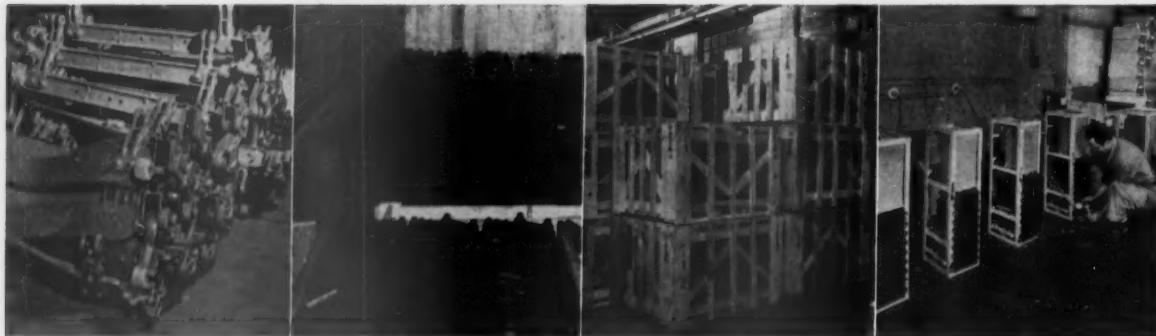
Congratulations, Canadian National!

from

INTERNATIONAL — suppliers of

**"Made in Canada" equipment for CNR'S
359 new passenger cars**

American Steel Foundries
Simplex Unit Cylinder Clasp Brakes
Fabreeka Sound Deadening
Frigidaire Air Conditioning
Hyatt Roller Bearing Journal Boxes
International-Chase Water Coolers
Security Bolster Locking Pins,
Coupler Centering Devices



ASF Clasp Brakes for safe, sure stops under all Canadian operating conditions.

Hyatt "Internal Lateral" Roller Bearing Journal Boxes —for easy riding and long wheel life.

Frigidaire Railway Air Conditioning—tried and proven in most rigorous Canadian service.

International - Chase Water Coolers — for dependability and interchangeability.

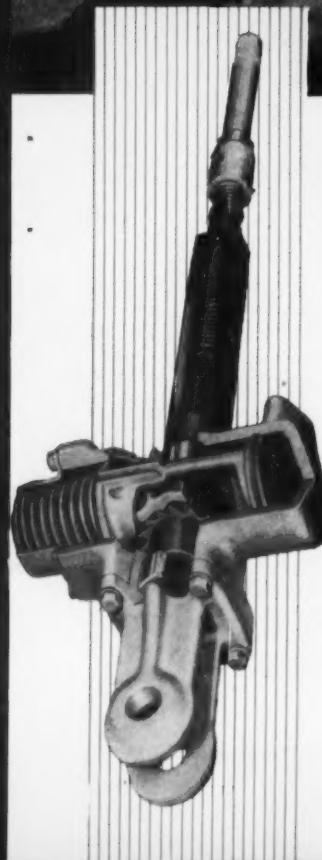
INTERNATIONAL EQUIPMENT COMPANY, LIMITED

Sales offices: MONTREAL, QUE., TORONTO, ONT.

PLANTS

1858 St. Luke St.
Montreal, Que.

90 Bates Road
Outremont, Que.



How much money could you save if you didn't have to adjust the slack on each freight car manually?

Every railroad man should find the answer to this question. If your potential savings are as great as we think they are, you may be able to save many thousands of dollars yearly with the Westinghouse Type D Pneumatic Automatic Slack Adjuster. Trains can be made up faster, put on the road faster, and yard congestion can be reduced.

The Type D slack adjuster is inserted between the cylinder lever and tie rod without the use of brackets or special mounting details. Installed in this manner

no manual adjustment is required for the entire life of the brake shoes, and train shocks cannot cause false take-up of slack.

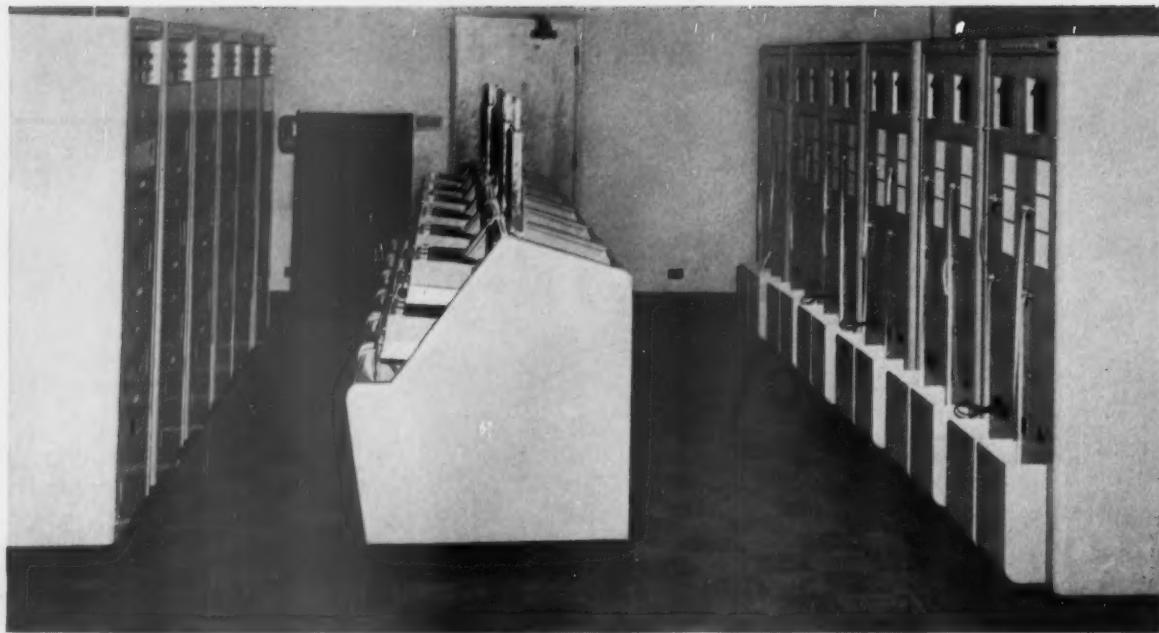
This completely automatic, completely pneumatic slack adjuster precisely measures brake piston travel. It gives positive slack take-up as soon as brake cylinder piston travel exceeds a predetermined setting. It's a wonderful money-saving, time-saving investment for every railroad. Write to Westinghouse Air Brake Company for complete information.

Westinghouse Air Brake COMPANY

AIR BRAKE DIVISION



WILMERDING, PA.



Bank of six "torn-tape" units. Each unit consists of monitor, transmitter and receiver, arranged to handle three incoming and three outgoing lines.

Compact new "torn-tape" units streamline message centers

"Torn-tape" is simply packaged equipment that enables you to apply assembly line efficiency to volume message relaying. Now re-designed by Teletype, the equipment is more compact, more easily installed and operated than ever before.

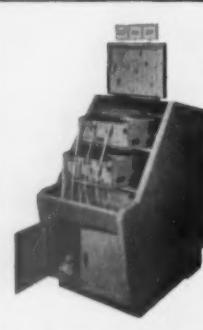
Receivers, transmitters (and monitors, when desired) are arranged in rows so that there is a separate aisle for receiving and transmitting attendants. Thus, by break-

ing down the relaying operations, unskilled personnel soon become specialists.

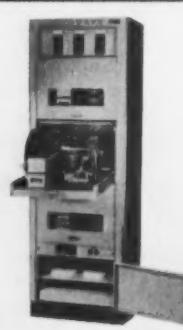
Each "torn-tape" unit is complete in itself—down to the power supply. Installation is virtually on a plug-in basis. A station may be set up . . . enlarged . . . moved . . . without disrupting the remaining operations of the message center. The equipment is maintained by regular printing telegraph personnel.



Receiver has extra positions, could accommodate six perforators.



Transmitter is a good working height, has generous tape accommodations.

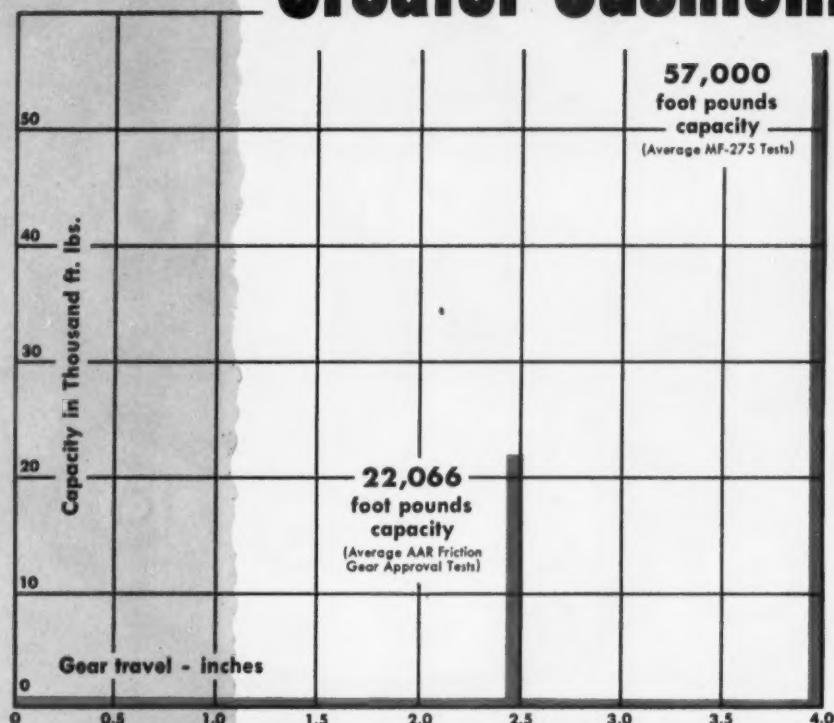


Monitor provides a record in storable form of all messages relayed by the center.

Many more new features have been added to the "torn-tape" equipment since it was first introduced several years ago. We'd be happy to give you complete information. Write to Teletype Corporation, 1400 Wrightwood Ave., Chicago 14, Illinois.

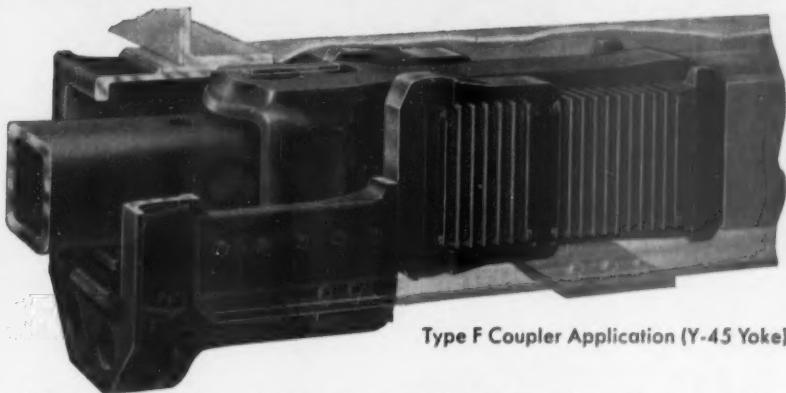


Greater Cushioning Capacity



through
longer
travel

NATIONAL Multi-Pad Rubber Draft Gear



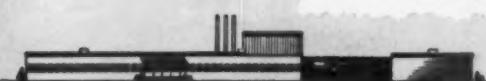
Type F Coupler Application (Y-45 Yoke)

With more gear travel in buff, the National MF-275* rubber gear gives greater cushioning capacity — *where it counts* — than certified friction gears. Tests have shown 57,000 foot-pounds capacity at the 4-inch travel mark.

Which all adds up to delivery of undamaged lading for increased customer good will — and dollars saved in damage claims and car maintenance! A-2000

Fits Standard AAR yokes and standard car construction with no slack in yoke or pocket!

*AAR Certified



Progress through Research™

Technical Center
Cleveland

NATIONAL MALLEABLE and STEEL CASTINGS COMPANY

Cleveland 6, Ohio

COUPLERS • YOKES • FREIGHT TRUCKS • DRAFT GEARS—RUBBER AND FRICTION
JOURNAL BOXES AND LIDS





"15 minutes
at the car
every two years"



* **VAPOR Unizone or Moduzone heating
on modern cars assures full comfort for every passenger**

*Unizone and Moduzone provide full comfort, yet save 90% in Coach-Yard Labor—reduce Store Parts by 60-70%.

Soon to be serving the Santa Fe, these fine Vapor Unizone and Moduzone cars here are nearing completion. Photo, The Budd Co.

Dome Cars, too, with their highly variable heating demands, have the same simple basic elements used in Vapor Unizone Systems for Coaches and in Moduzone Systems for Room Cars. Upstairs, downstairs—in every part of every car—uniform temperatures are maintained automatically, yet 15 minutes every two years is average for at-the-car servicing. Vapor railroad experience meets railroad needs—completely...economically.

Canadian National selected Vapor Moduzone for passenger comfort on these modern new room cars. Photo courtesy Pullman-Standard.

New Union Pacific cars have Vapor Unizone and Moduzone for the complete comfort of passengers. Photo, American Car & Foundry.



VAPOR HEATING CORPORATION

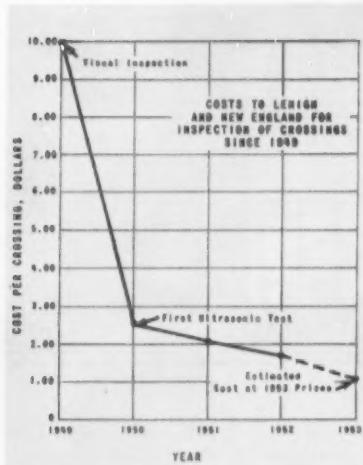
80 East Jackson Boulevard, Chicago 4, Illinois

NEW YORK • ST. PAUL • DENVER • ST. LOUIS • ATLANTA • WASHINGTON • PHILADELPHIA
SAN FRANCISCO • HOUSTON • JACKSONVILLE • RICHMOND • MONTREAL • LOS ANGELES

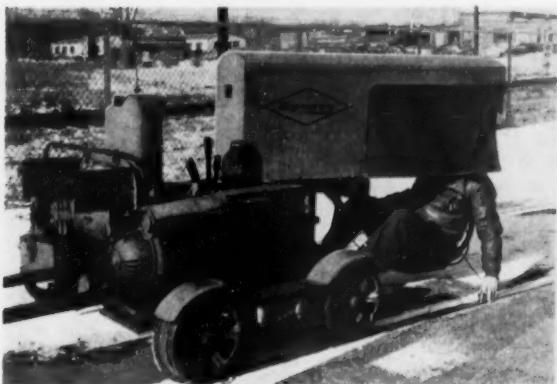
Rail Joint Testing Costs Cut 80% for L & NE by Sperry Ultrasonic Detection Method



Mr. H. E. Jones, Engineer, Maintenance of Way for the Lehigh and New England reports, "We have long been interested in rail testing and have employed Sperry's induction method since 1931, first at three, then two and more recently, with increased traffic, at one year intervals. Our first use of the ultrasonic test car was in 1950 and the results shown here speak for themselves."

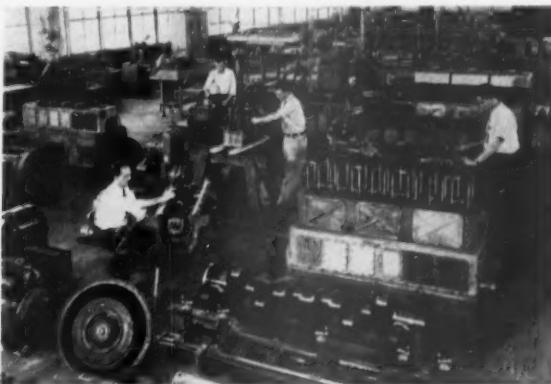


"Here is a graphic picture of the cost savings attained through the Sperry Ultrasonic Detector Car testing of crossings compared with our former visual inspection costs." Mr. Jones further advises, ". . . this same efficient performance applies to various other types of track structure—frogs, joints, at platforms, at heels of switches—without any need for disassembly."



Most advanced method for detection of rail and defects within joint bar limits is with the Sperry Ultrasonic Detector Car shown here. Thoroughly trained and experienced Sperry operators have succeeded in bringing costs to the amazingly low figure of less than 8½¢ per joint in 1953—based on an average of all railroads tested.

No disassembly or labor for uncovering concealed rail joints is required to locate dangerous defects in the joint bar area when the ultrasonic method is used. Head and web separations and bolt hole cracks are located accurately and instantaneously.



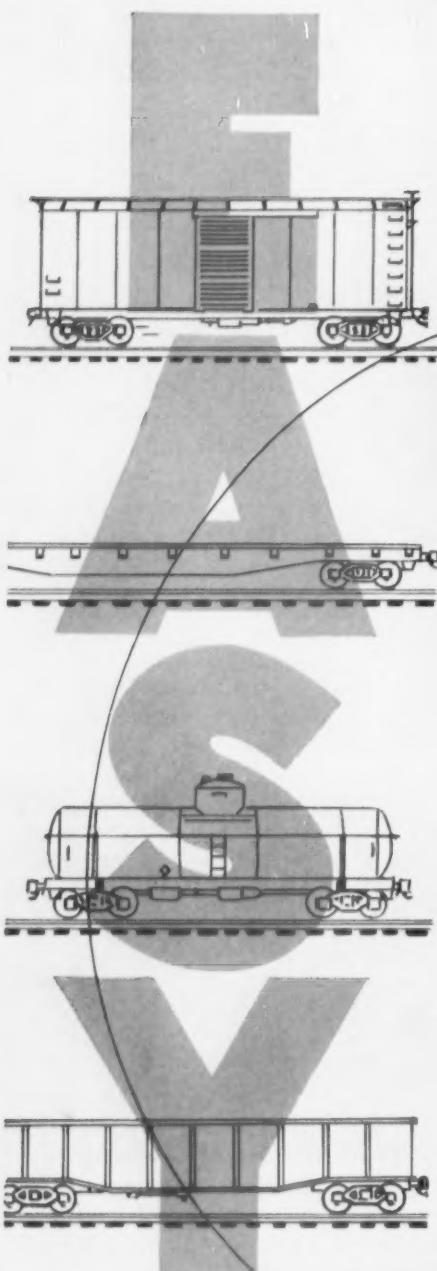
Two factors contributing materially to the economy and high performance of Sperry Rail Testing are the continuing research conducted to improve on present methods and equipment and the exhaustive maintenance program to keep all Sperry equipment at top operating efficiency. Above is section of large maintenance shops at Danbury.



SPERRY RAIL SERVICE

Division of Sperry Products, Inc.
Danbury, Conn.

New York Chicago St. Louis



603R

BARBER STABILIZED FREIGHT CAR TRUCKS

The principal reason for this time-and-dollar-saving ease-of-assembly is that when the bolster is lifted all springs are free as in an A.A.R. truck.

ONLY THREE ESSENTIAL PARTS PER COLUMN

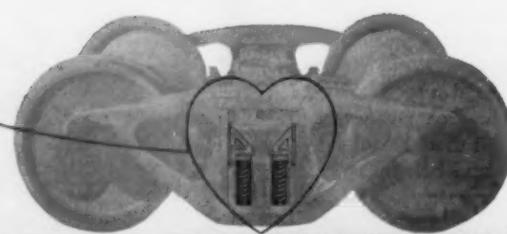


- 1—Special Heat-Treated Alloy-Iron friction casting having 35 inches of friction-bearing surface retained in the bolster.
- 2—Spring-steel wear plate securely bolted or welded to the column.
- 3—Friction-casting supporting side-spring having a minimum $\frac{3}{8}$ " initial compression, removed with the bolster spring.

Barber Side Springs carry part of the load, thus increasing bolster spring capacity and reducing net cost.

Because of the extremely easy ride given by Barber Stabilized Trucks, the possibility of damage to car structure and lading is greatly reduced.

More than 350,000 car sets of Barber Stabilized Trucks have been specified up to this time.

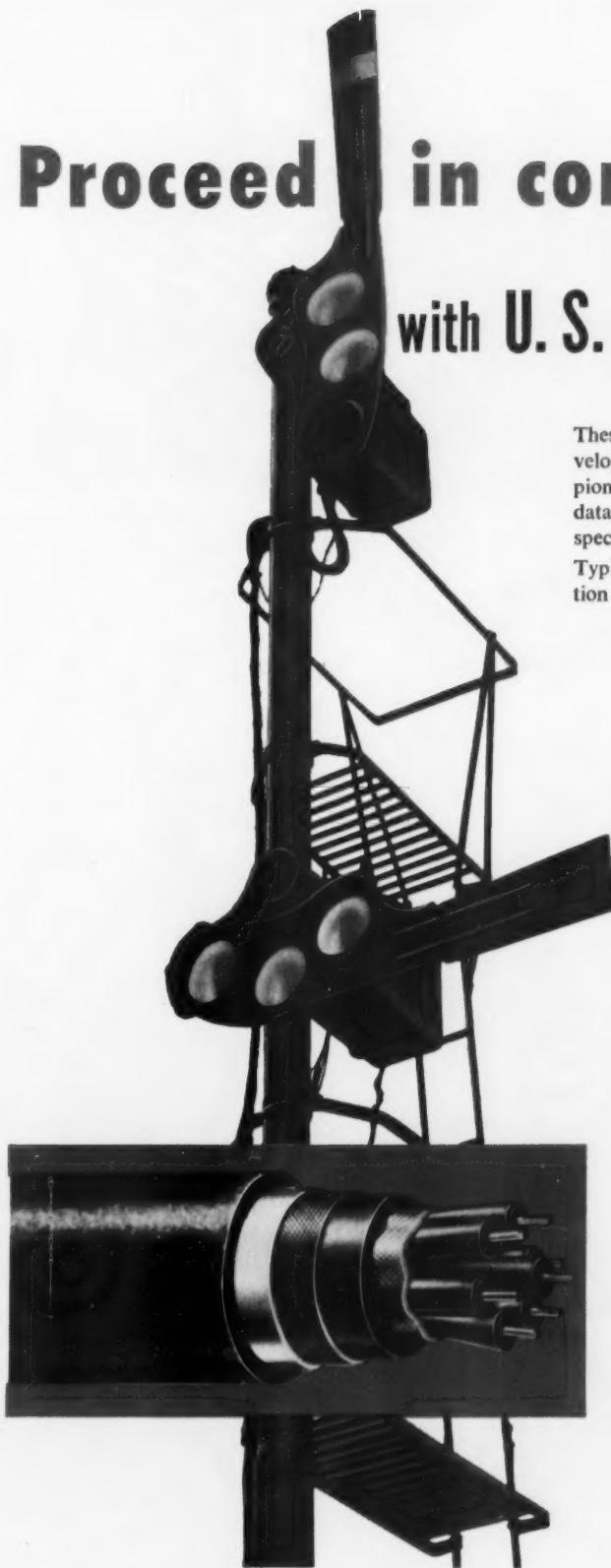


STANDARD CAR TRUCK COMPANY

332 SOUTH MICHIGAN AVE.
CHICAGO, ILLINOIS

Proceed in confidence

with U. S. Railroad Signal Cables



These Cables have all the United States Rubber Company developments that make for positive safety. "U. S." has been a pioneer in insulation for 68 years—has accumulated research data and unmatched experience. Electrical insulation is a "U. S." specialty.

Typical of U. S. Signal Cables for underground use is specification No. 871 embodying the following:

- Solid, annealed coated copper conductor.
- An insulation that is a high heat- and moisture-resistant compound with high insulation resistance and voltage breakdown, as well as low dielectric constant, low transmission loss and low power factor. The thickness of the insulation is .078" for conductor sizes 14 through 8, and .094" for conductor size 6.
- A neoprene jacket is bonded to the insulation, providing it with long-time protection against acids, alkalies, heat, light, oil and mechanical abuse, particularly at the exposed ends. The thickness of this jacket is .020" for conductor sizes 14 through 10, and .030" for conductor sizes 8 and 6.
- Moisture-resistant, non-wicking rubber fillers are used as required.
- A rubber-filled tape providing cushioning for the outer jacket is applied over the assembly.
- An outer jacket made of neoprene is applied over the taped assembly for additional physical and chemical protection.
- A rubber-filled tape is applied over the outer neoprene jacket to serve as bedding for the bronze tape.
- A bronze tape is applied, providing a tough, non-corrosive barrier against rodents, termites and microorganisms.
- The overall protective covering consists of a jute braid weatherproofed and treated with mica for protection of the bronze tape during the installation and in service.

United States Rubber Company is the only electrical wire and cable manufacturer that grows its own natural rubber and makes its own synthetic rubber and plastics. That is why "U. S." gives you the finest in electrical insulation. "U. S." makes all A. A. R. standard types of wires and cables or will design to your exacting specifications. Other "U. S." wires and cables include: Royal Portable Cords and Cables, Underground and Overhead Power, Communication, Railroad Utility, Track Wire, Welding, Locomotive Headlight and Train Control Wires and Cables, etc. Write for specific information.

UNITED STATES RUBBER COMPANY
ELECTRICAL WIRE AND CABLE DEPARTMENT • ROCKEFELLER CENTER, NEW YORK 20, N. Y.



high speed



44,700

FOR MILES

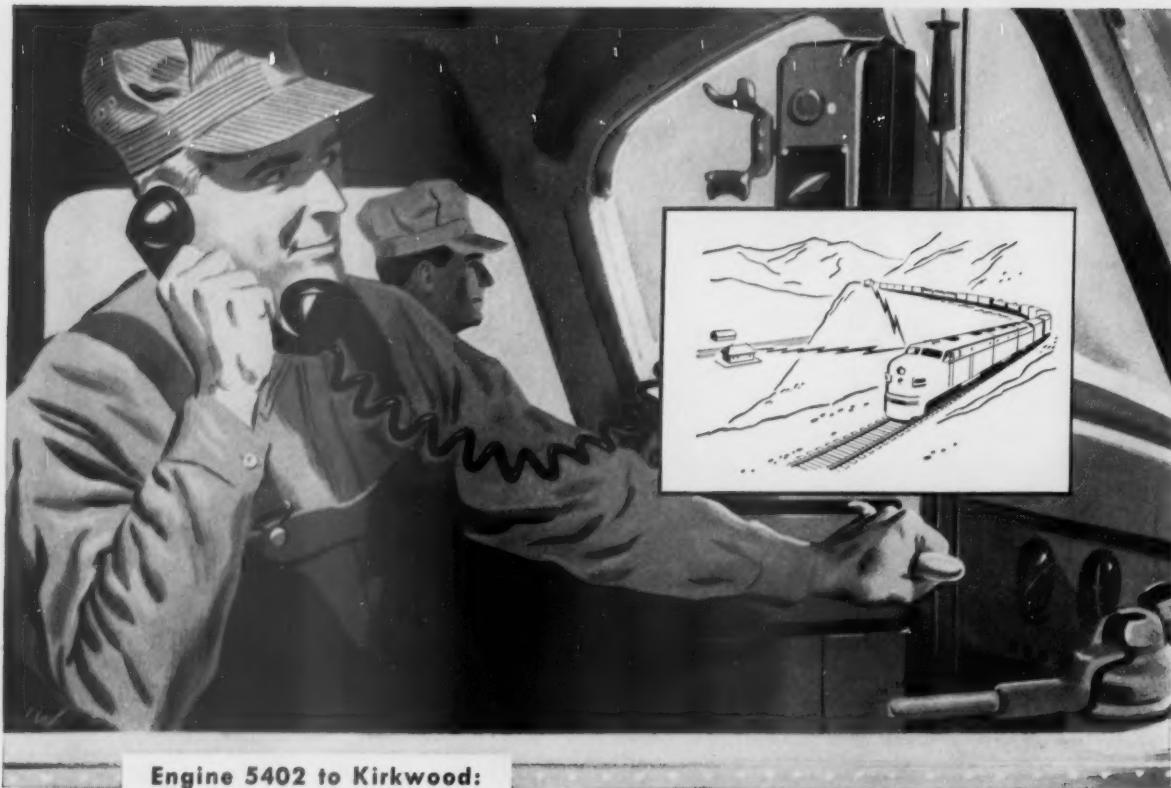
Standard Diamond "S" brake shoes averaged
44,700 miles of service on the high speed
Denver Zephyr operated by the
Chicago, Burlington & Quincy Railroad.

Equally economical performances can be
obtained on railroads where metal brake shoes
are used with well-maintained brake rigging.

Continuous research and progressive
manufacturing methods enable the
American Brake Shoe Company to produce
brake shoes with longer life
and more dependable braking performance.



BRAKE SHOE AND CASTINGS DIVISION



Engine 5402 to Kirkwood:

"We've picked up 15 minutes— we're ready to highball!"

Fifteen minutes of train time, crew time, and track time can represent a tremendous dollar saving... and it doesn't take many of these incidents to buy the Motorola equipment that makes such savings.

Time saved in over-the-road operations means lower diesel fuel bills, reduced engine costs, lower per diem freight car charges.

In yard and terminal operations, Motorola radio reduces the loss of unproductive time—as the yardmaster knows the position of each engine—for immediate dispatching to the next point.

In car checking, car inspection

and trimmer engine direction, Motorola radio pays its own way many times over.

In every type of railroad operation Motorola railroad radio meets with growing favor among the men using it. It saves climbing up and down cars and slippery embankments. It definitely protects life and property.

With Motorola Two-Way Radio, railroads benefit from the finest in equipment, backed by more than a quarter of a century of experience in mobile radio and continuous progress in specialized railroad radio. Also, Motorola installations are serviced by the

best and strongest national sales and service organization in the industry...assurance of communications that stay reliable and available at all times.

Write, wire or phone our Railroad Division today and let us send a railroad radio communications specialist to meet with your operations people.

Motorola Communications & Electronics, Inc.

A SUBSIDIARY OF MOTOROLA, INC.

4501 W. Augusta, Chicago 51, Ill. • Rogers Majestic Electronics Ltd., Toronto, Canada



Motorola 2-way Radio for Better Railroad Communication!

giving your freight

MORE CO

is our business

Freight Car Trucks

QUALITY PROVED

by Millions of

Service Miles . . .



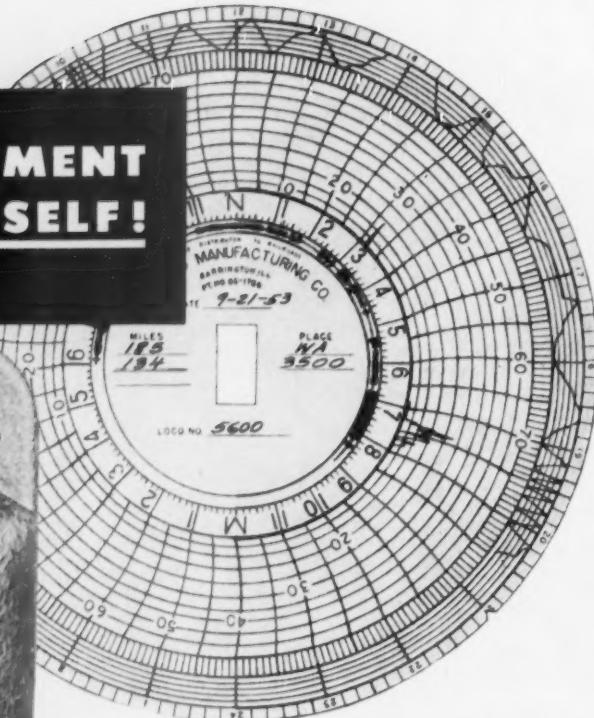
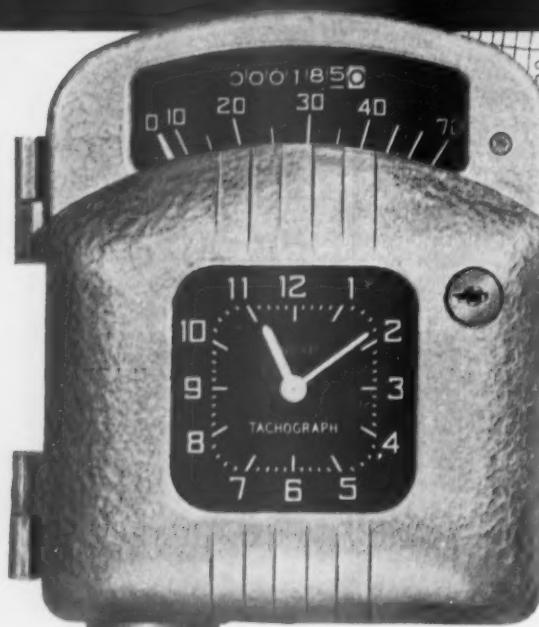
SCULLIN STEEL CO.

SAINT LOUIS 10, MISSOURI

NEW YORK
CHICAGO
BALTIMORE
RICHMOND, VA.
CLEVELAND



HERE IS AN INSTRUMENT THAT PAYS FOR ITSELF!



The improved Model CC Switch Engine Recorder provides a 24-hour daily chart of time moving, time standing, speed, and distance traveled. Visually, it shows speed, time, and total mileage.

- Few, if any, investments available to railroads today pay a higher rate of return than the Barco Switch Engine Recorder. It is unique; there is nothing else like it for giving Operating Departments *facts* needed to:

1. Eliminate Many Delays
2. Reduce Overtime Costs
3. Get More Work Done
4. Protect Efficient Supervisors and Crews

More than 100 different users now have over 500 of these instruments in service. The chart records produced give yard supervisors accurate data for planning operations to prevent delays and insure effective use of each unit. Barco Switch Engine Recorders are simple to install and easy to use. Our nearest representative will be glad to show you how to use them to attain maximum efficiency in yard operations. *Call or write today.* **BARCO MANUFACTURING COMPANY,** 501D Hough Street, Barrington, Illinois.

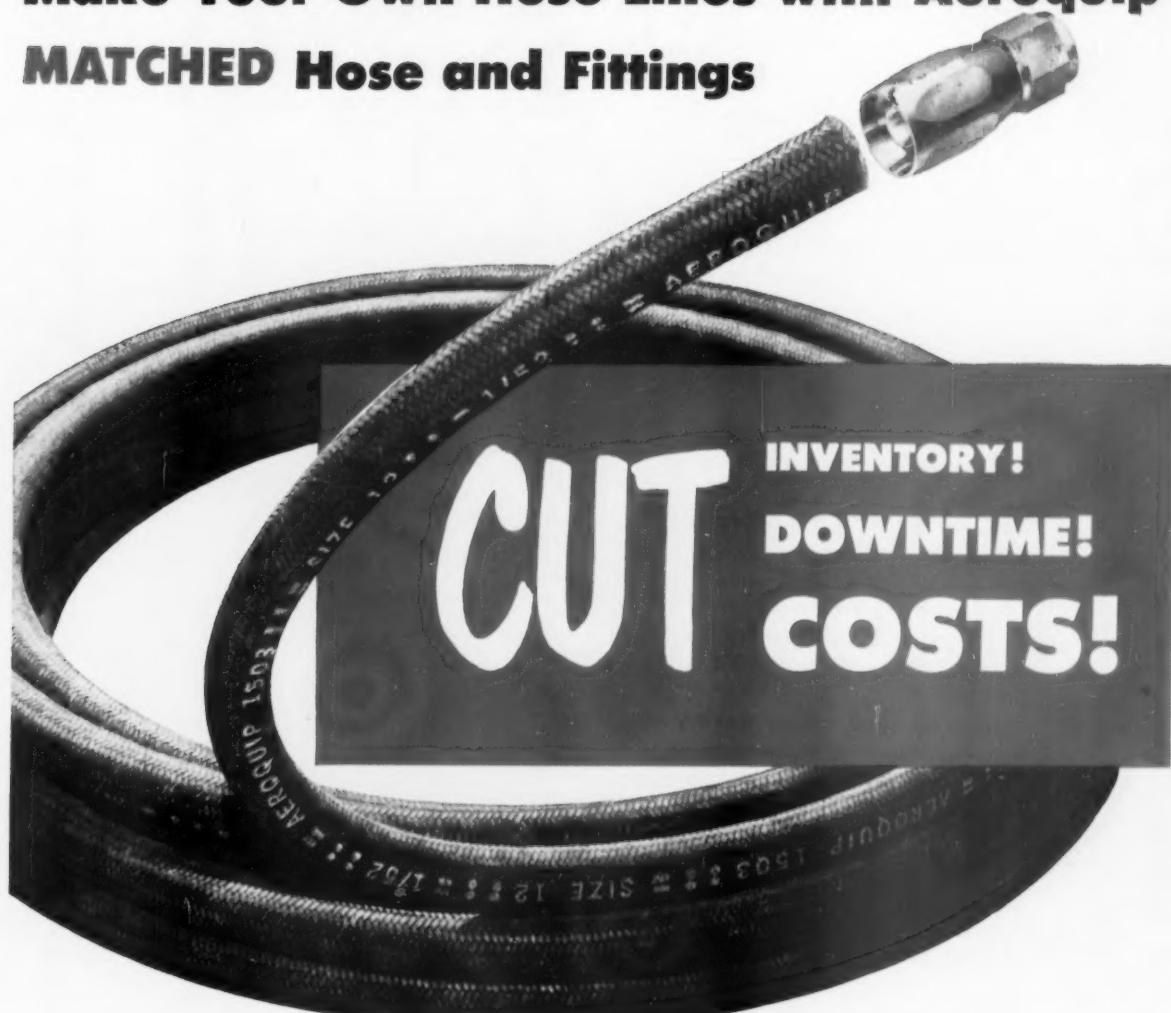
- Send for a copy of new Bulletin 2000



BARCO SWITCH ENGINE RECORDER

WHAT HELPS RAILROADS, HELPS AMERICA

Make Your Own Hose Lines with Aeroquip MATCHED Hose and Fittings



Aeroquip Fittings are designed, developed, and produced to go with Aeroquip Hose. They form such a foolproof combination that Aeroquip guarantees performance. Thus, the hose lines made right in your own plant always measure up to Aeroquip's exacting standards of quality, the highest in the industry. A small supply of Aeroquip Bulk Hose and Fittings assures you of quick hose line replacements at all times . . . and Aeroquip Fittings are detachable and may be used again and again when making new hose assemblies.

REG. TRADE MARK



AEROQUIP CORPORATION, JACKSON, MICHIGAN

SALES OFFICES: Burbank, Calif. • Dayton, Ohio • Hagerstown, Md. • High Point, N.C. • Miami Springs, Fla. • Minneapolis, Minn. • Portland, Ore. • Van Wert, Ohio • Wichita, Kan.
IN CANADA: Preco Progress and Engineering Corporation Ltd., Toronto • IN ENGLAND: Super Oil Seals & Gaskets, Ltd., Birmingham

AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U.S.A. AND ABROAD

An open letter to all railroad presidents

American Hoist & Derrick Company

CABLE ADDRESS
"DERRICK"

Saint Paul 1, Minnesota

Gentlemen:

You, along with other leading railroad men, have put the iron horse to pasture.

High-powered diesels now move your crack passenger trains swiftly and safely; today, diesels move the greatest amount of freight in the history of railroads at less cost!

You know this. But, have you thought about the inefficient, steam-powered materials handling equipment in your backyard that daily bites deeper into your profits?

The same good reasons that sealed the fate of steam for passenger and freight operation -- high maintenance cost, high labor cost, inefficiency -- hold true for your materials handling equipment.

What can you do about it? Just this. Sign your name on the bottom of this letter and mail it to me. An American representative will be glad to review your entire materials handling problem. He will show you, through actual operating records, how the new, efficient American DiesELectric Locomotive Crane will pay for itself in a few short years.

The American DiesELectric Locomotive Crane will handle your materials handling problems, at a substantial savings!

Sincerely yours,


S. C. Brown
Advertising Manager

SCB/mt

4601



HUMPTY DUMPTY GETS A SMOOTH RIDE
 in freight cars cushioned with "RAILWAY" SPRINGS

Profit-wise carriers help guard against damaged lading and resulting claims by specifying "Railway" long travel, coil springs for their cars. These freight-cushioning springs also assure longer life for rolling stock and reduced roadbed maintenance costs.

Smooth the way for your freight loads and profits by specifying rugged, long travel "Railway" springs . . . products of one of America's oldest spring manufacturers. Just call in your Alco sales representative for complete information.

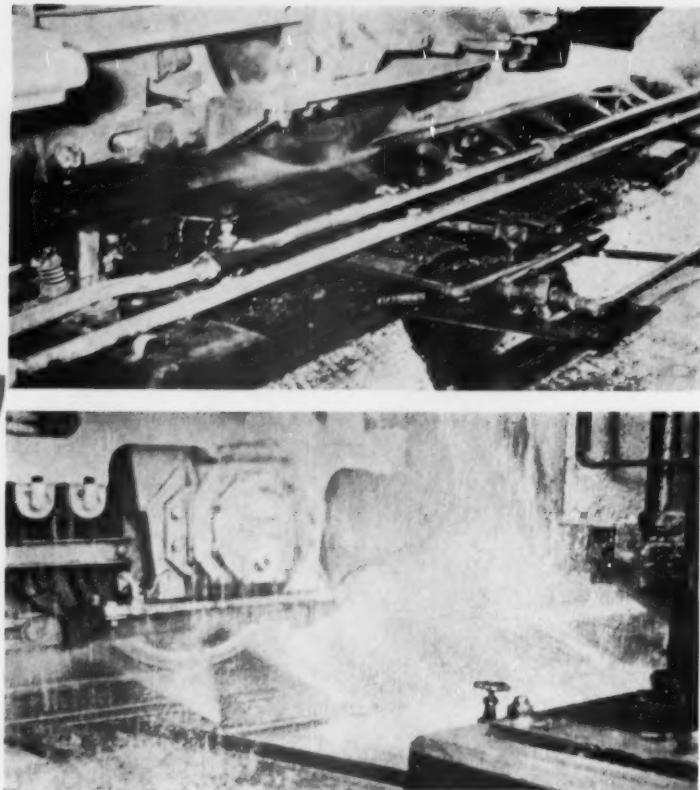
RAILWAY STEEL-SPRING DIVISION
 AMERICAN LOCOMOTIVE COMPANY

NEW YORK • CLEVELAND • CHICAGO
 RICHMOND • ST. LOUIS • ST. PAUL
 SAN FRANCISCO



SAVE MONEY

**Clean diesel
wheels and trucks
with automatic
Oakite "track-trip"
spray-washing**



Oakite automatic "track-trip" wheel cleaning set-up saves money. It prevents solution and rinse water waste. Top picture, cleaning. Bottom picture, rinsing.

YOU ARE LOOKING at a set-up for cleaning and rinsing diesel wheels and trucks. It was designed by Oakite for a big Western Railroad. These pictures were taken at that yard.

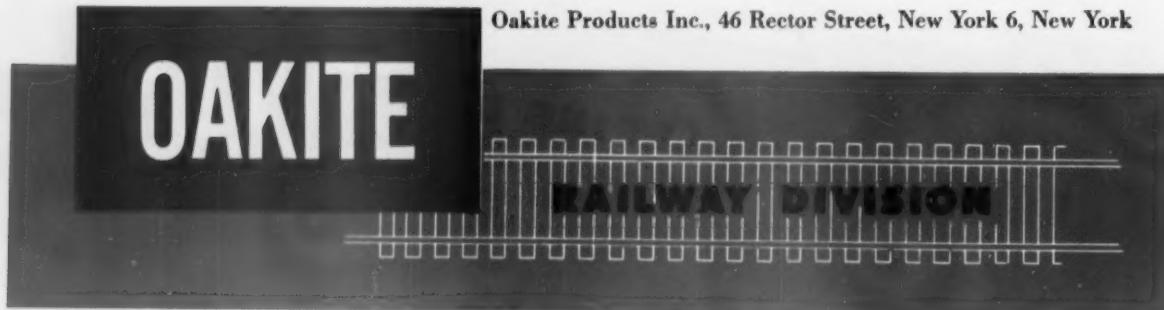
THIS ROAD wanted to eliminate costly, time-consuming manual cleaning. They were looking for some simple, inexpensive mechanical method . . . one they could build themselves in their own yard.

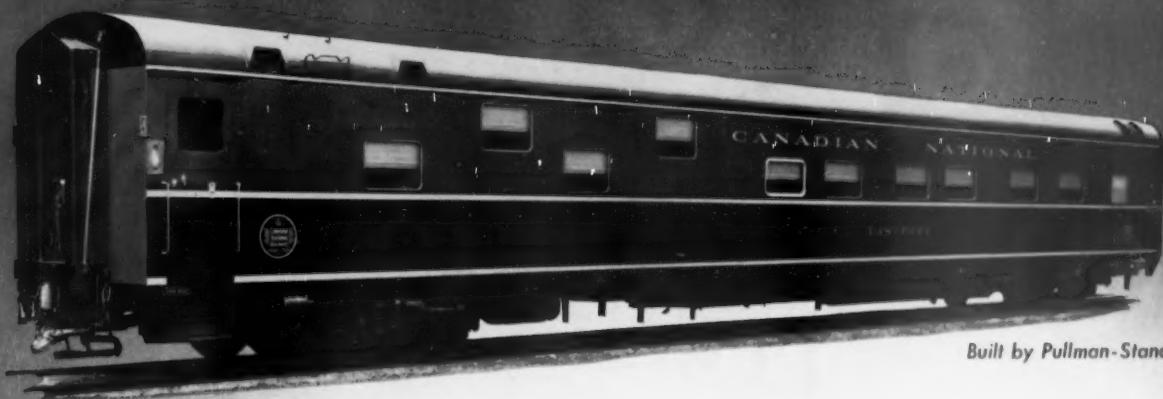
HERE'S HOW IT WORKS. Pressure, transferred from wheel flange to track tripper, depresses valves for spray cleaning. Solution spray responds only to wheel pressure. Spraying stops as wheel pressure diminishes.

RESULTS. Considerable savings in solution upkeep and less waste of rinsing water since spraying occurs only as wheels enter spraying area. No time wasted for manual valve adjustments. No hand scrubbing.

If you'd like more information on washing diesel wheels and trucks just drop us a line. We'll be glad to send you complete details, drawings.

Oakite Products Inc., 46 Rector Street, New York 6, New York





Built by Pullman-Standard

New Canadian National Passenger Cars

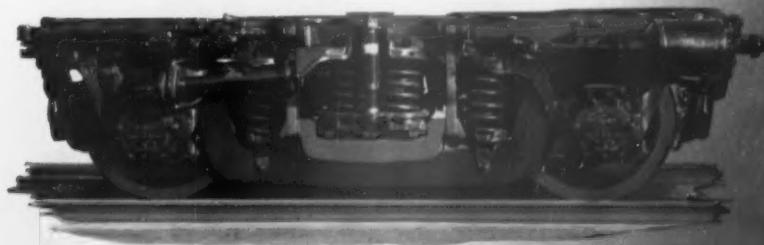
Use Latest Type Trucks and Central Bearings

for Comfortable Riding—Simplified Maintenance

The several hundred modern first-class passenger cars of various types being built for the Canadian National Railway are equipped with Commonwealth 4-Wheel Outside Swing Hanger Type Trucks and the new *Central Bearing*.

Commonwealth trucks with outside spring suspension not only assure better riding cars, but greatly simplify inspection and maintenance because of the greater accessibility of parts. Central Bearings, which take the place of the center plates, eliminate truck shimmy, side bearing problems and lubrication, materially reducing upkeep costs and substantially increasing wheel mileage between turnings.

The Canadian National, like more and more leading railroads, is adopting Commonwealth *Outside Swing Hanger Trucks* and *Central Bearings* for improved travel comfort and lower maintenance expense.



Commonwealth Truck for Canadian National Cars



GENERAL STEEL CASTINGS

GRANITE CITY, ILLINOIS

EDDYSTONE, PA.

How U.P. central sign shop "mass produces" signs of SCOTCHLITE

REG. U.S. PAT. OFF.

REFLECTIVE SHEETING



BY GEARING its central sign shop to the mechanized fabrication of reflectorized signs and signals, Union Pacific holds production costs to a minimum. Signs of "Scotchlite" Reflective Sheeting are quickly, easily produced with a high-speed vacuum applicator. One-man operated applicator bonds sheeting to sign surfaces—both new and old—in just six minutes flat! No special skills or long training necessary for operation. Write today for drawing of sign shop layout and sign production system. No obligation.

REG. U.S. PAT. OFF.
SCOTCHLITE
BRAND
REFLECTIVE SHEETING



The term "Scotchlite" is a registered trademark of Minnesota Mining and Mfg. Co., St. Paul 6, Minn. General Export: 122 E. 42nd St., New York 17, N. Y. in Canada: London, Ont., Can.



HIGH SPEED Vacuum Applicator quickly turns out signs of "Scotchlite" Reflective Sheeting—the brilliant, reflective material that is visible at half a mile in all weather; is readable at one thousand feet. They meet and exceed AAR signal section specifications.



CUT-OUT LETTERS, patterned to your specifications, are quick and easy to apply. Need no drying time. Emblems and striping, too, of "Scotchlite" Reflective Sheeting save application-time... take but minutes to apply.

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF JANUARY 1954

Cult home to file

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF JANUARY 1954

Name of Road	Operating Expenses										Net Revenue												
	Main, Way and Structures					Equipment					Operating					from							
Average miles operated during period		Operating Revenues			Total (inc. inc.)		Total		Total		Total		Total		Total		Railway		Net operating income				
		Freight	Pass.	Total	1954	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954	1953			
Louisiana & Arkansas.....	Jan.	752	2,030	66	2,183	2,257	271	335	2,272	269	2,272	227	68	76	611	1,369	1,362	60,0	66,3	67,4	380		
Louisville & Nashville.....	Jan.	4,733	1,033	1,053	17,336	19,062	2,165	2,519	2,233	3,038	3,150	814	330	6,401	13,789	14,049	73,7	73,7	73,7	3,547			
Maine Central.....	Jan.	9,444	1,944	1,103	2,143	2,376	419	427	46	536	360	73	1,518	1,518	1,518	74	1,217	1,217	74	74	74	463	
Midland Valley.....	Jan.	1,153	1,153	1,153	1,153	1,153	171	31	39	5	16	532	73	136	118	30	28	317	1,970	1,970	1,970	463	
Minneapolis & St. Louis.....	Jan.	1,397	1,352	1,352	1,413	1,666	248	248	253	258	258	77	130	1,359	1,354	1,354	74	1,311	1,311	74	76,8	76,8	76,8
Minn., St. Paul & South St. Paul.....	Jan.	3,222	2,107	65	2,333	2,652	574	592	47	625	678	100	81	1,199	2,613	2,137	112,0	1,623	1,623	1,623	280	198	198
Mississippi Central.....	Jan.	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	
Missouri Illinois.....	Jan.	148	172	293	554	494	666	690	984	984	984	984	984	984	984	984	984	984	984	984	984		
Missouri-Kansas-Texas Lines.....	Jan.	3,242	5,109	6,109	6,842	7,738	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758	9,758		
Missouri Pacific.....	Jan.	6,922	14,530	19,145	19,758	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257		
International-Great Northern.....	Jan.	6,222	2,257	161	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257	2,257		
Pittsburgh & Lake Erie.....	Jan.	1,723	3,206	80	3,509	3,879	673	862	455	519	519	169	94	1,196	1,196	1,196	2,790	2,790	2,790	2,790	2,790		
Monongahela.....	Jan.	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483	483		
Monon.....	Jan.	177	174	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170		
Nashville, Chattanooga & St. Louis.....	Jan.	1,032	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454	2,454		
New York Central.....	Jan.	10,716	40,610	9,837	57,975	67,255	7,215	9,145	10,464	13,611	13,611	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	1,046	
Pittsburgh, Chicago & St. Louis.....	Jan.	2,184	11,133	176	11,613	13,913	1,369	1,807	1,807	1,807	1,807	1,807	1,807	1,807	1,807	1,807	1,807	1,807	1,807	1,807	1,807		
New York, New Haven & Hartford.....	Jan.	1,771	5,532	4,212	12,114	13,461	1,564	1,878	249	1,937	2,007	2,007	2,007	2,007	2,007	2,007	2,007	2,007	2,007	2,007	2,007		
New York, New York Connecting.....	Jan.	3,211	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111	3,111		
New York, Ontario & Western.....	Jan.	541	477	39	432	450	53	450	53	53	53	61	61	61	61	61	61	61	61	61	61		
New York, Susquehanna & Western.....	Jan.	120	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274	1274		
Norfolk Southern.....	Jan.	3,135	12,668	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721	11,721		
Pittsburgh & West Virginia.....	Jan.	6,066	9,659	569	11,258	13,340	2,105	1,938	242	3,030	2,711	441	317	6,031	12,195	11,564	10,983	10,983	10,983	10,983	10,983		
Northern Pacific.....	Jan.	331	806	806	806	806	806	806	806	806	806	806	806	806	806	806	806	806	806	806	806		
Oklahoma City, Adm-Ark-Ark.....	Jan.	132	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88		
Pennsylvania-Reading Seashore Lines.....	Jan.	10,051	52,494	12,901	72,292	85,412	9,025	10,452	17,041	16,452	16,452	16,452	16,452	16,452	16,452	16,452	16,452	16,452	16,452	16,452	16,452		
Pittsburgh & Shawmut.....	Jan.	358	97	179	180	173	223	223	217	217	217	217	217	217	217	217	217	217	217	217	217		
Pittsburgh Reading.....	Jan.	132	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322	322		
Richmond, Fredericksburg & Potomac.....	Jan.	118	658	658	658	658	658	658	658	658	658	658	658	658	658	658	658	658	658	658	658		
Rutherford.....	Jan.	392	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725		
Sacramento Northern.....	Jan.	264	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178	178		
St. Louis-San Francisco.....	Jan.	4,601	8,700	484	9,960	10,777	1,526	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611	1,611		
St. Louis, San Francisco & Texas.....	Jan.	159	336	3	359	405	41	60	60	60	60	60	60	60	60	60	60	60	60	60	60		
Seaboard Air Line.....	Jan.	1,561	4,776	610	9,837	102	793	851	195	171	8	76	6	16	17	175	275	275	275	275	275		
Southern.....	Jan.	4,286	17,162	1,594	20,444	23,453	2,087	4,579	5,232	553	7,852	8,366	803	1,672	3,017	10,388	7,200	7,200	7,200	7,200	7,200		
Alabama Great Southern.....	Jan.	326	77	77	1,432	1,678	2,208	313	322	322	322	322	322	322	322	322	322	322	322	322	322		
Gulf, Mobile & Northern Pacific.....	Jan.	337	2,827	212	3,259	3,793	464	426	38	38	765	784	149	149	149	149	149	149	149	149	149		
Georgia Southern & Florida.....	Jan.	397	620	102	1,326	1,474	2,087	2,319	2,319	2,319	2,319	2,319	2,319	2,319	2,319	2,319	2,319	2,319	2,319	2,319			
Seaboard Air Line.....	Jan.	203	30,148	2,923	5,064	5,064	11,257	13,025	1,040	938	938	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117	1,117		
Texas & New Orleans.....	Jan.	4,292	10,004	5,644	866	866	1,086	2,099	408	50	50	22	22	22	22	22	22	22	22	22	22		
Spokane International.....	Jan.	1,883	86	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883		
Spokane, Portland & Seattle.....	Jan.	944	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883	1,883		
Tennessee Central.....	Jan.	286	369	1	390	485	70	100	5	60	65	22	22	11	135	299	345	76,7	76,7	76,7	76,7		
Texas & Northern.....	Jan.	1,829	5,008	389	6,642	7,353	1,040	938	938	938	938	938	938	938	938	938	938	938	938	938	938		
Texas & Pacific.....	Jan.	1,611	2,020	202	214	298	2,079	2,416	416	46	46	7,906	8,066	8,066	8,066	8,066	8,066	8,066	8,066	8,066	8,066		
Texas Mexican.....	Jan.	857	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473	3,473		
Toledo, Peoria & Western.....	Jan.	1,193	3,346	195	3,610	4,635	644	644	644	644	644	644	644	644	644	644	644	644	644	644	644		
Union Pacific.....	Jan.	1,042	1,950	33	2,115	2,581	346	310	310	310	310	310	310	310	310	310	310	310	310	310	310		
Utah.....	Jan.	110	98	111	3,032	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952	3,952		
Virginia.....	Jan.	1,829	7,946	393	1,040	3,476																	

CONGRATULATIONS...to the
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Railways



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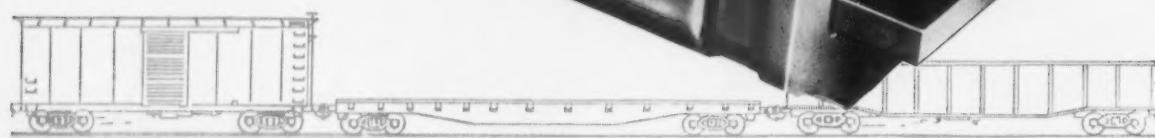
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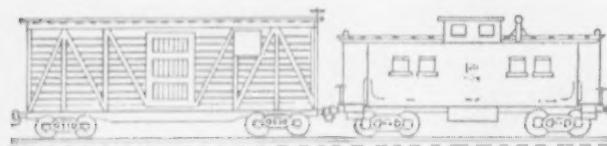


ABSORPTION

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**CARDWELL FRICTION
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Short or Long Travel



**Cardwell Westinghouse Co., Chicago
Canadian Cardwell Co., Ltd., Montreal**

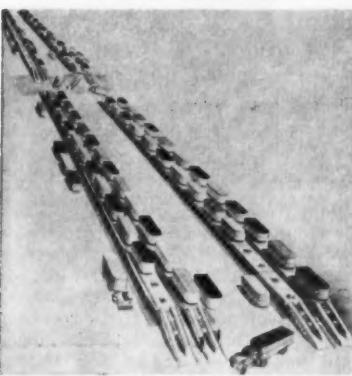
What's New in Products



The "Traileramp" as used by the Chicago & North Western for its piggyback service at Milwaukee.

Ramp to End-Load Trailers on Flats

Flexible new system offered to convert any team track into a "piggyback" terminal



Idle team tracks—or any tracks having a paved surface which can be used by trucks—can be turned into a trailer-loading terminal without the need for a large investment in fixed facilities, under a plan for end-loading of flat cars being promoted by the Brandon Equipment Company, 332 South Michigan Ave., Chicago.

The system uses any standard flat car (equipped with necessary tie-down devices), a portable lightweight welded magnesium ramp, and a yard tractor especially designed for moving trailers on and off flat cars.

The heart of the Brandon system is the portable ramp, manufactured by

the Magnesium Company of America. This "Traileramp" is available in four different designs—each developed to meet different equipment and load requirements. Total weight varies between 4,875 and 5,960 lb., and capacities from 59,000 lb. (axle load 33,000 lb.) to 100,000 lb. (axle load 60,000 lb.).

The second feature of the Brandon system of end-loading is the "Yardmobile"—a tractor designed for loading and unloading trailers from flat cars where volume movement must be handled quickly. The unit is equipped with seats to one side and facing both ways, and dual controls, so the operator always faces in the direction he is traveling, with full vision. Other features include a hydraulic fifth wheel for rapid pick-up of trailers; four-wheel drive for maximum traction; dual steering of both front and rear wheels permits lateral movement; and a very short turning radius •

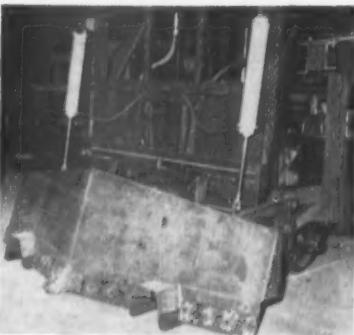
Packaged Masonry Chimney

A lightweight masonry chimney in packaged form is being introduced into the railway field by the Van Packer Corporation, Chicago. It is said that

this chimney can be set up at the average installation in 3 man-hours or less. It is said to be applicable either as a new or replacement unit on small freight and passenger stations, maintenance-of-way buildings, car-repair shops and diesel-repair shops. The complete package contains the chimney support, chimney sections, joint cement, chimney housing, housing cap, chimney pot and accessories, with nothing else to provide.

Each chimney section is composed of an acid-proof fire clay tile inner lining enclosed in a 3-in. vermiculite concrete wall with an asbestos-cement outer jacket. In tests conducted by the Underwriters' Laboratories, these chimney sections have withstood temperatures in excess of 2,000 deg. F. They are listed for all fuels by the Underwriters' Laboratories and the American Gas Association.

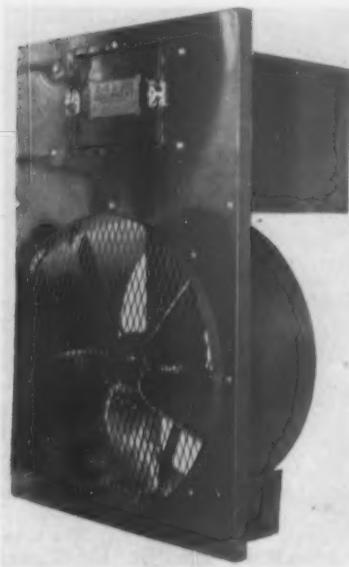
In installing a chimney, the first chimney section is placed in the chimney support. It may be directly over the heating unit to conserve space. This chimney support consists of heavy iron straps preshaped to the contour of the chimney which are nailed to the ceiling joists or beams. Chimney sections, available in 1- and 2-ft. lengths, are then added until the desired height is reached. These sections are joined with acid-proof, leak-proof, thermal-setting joint cement. The housing cap is then added and the chimney pot set in place. A refractory rain cap is available in the package if desired. Two chimney housings are available. They include one of aluminum 14½ in. wide and 18½ in. deep when installed and a cement-asbestos "brick panel" housing embossed and painted brick red with natural mortar lines, which measures 16 in. wide by 24 in. deep •



Center Plow for Ballast Car

A center plow for distributing and leveling excess ballast between the rails is now available for attachment

to the Class M23 Series E ballast maintenance car manufactured by Fairmont Railway Motors, Fairmont, Minn. The plow is hinged to the frame of the machine and is raised or lowered by pneumatic cylinders. When in the lowered position the plow rides on shoes that slide on the rail. The position of the lower edge of the plow with respect to the top of the rail can be varied by installing or removing shims from between the shoe and its support. •



Spray Room Exhaust Fan

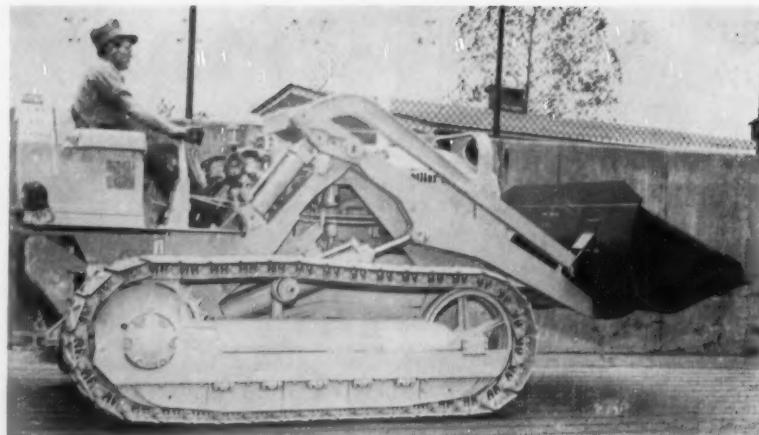
The M & E Manufacturing Co., 2531 Winthrop ave., Indianapolis 5, Ind., has announced a new and improved wall or window mounted sheet metal exhaust unit, primarily designed for installation in areas where it is necessary to exhaust hazardous fumes, such as paint overspray and engine block cleaning equipment.

The unit may be installed in an existing window or concrete block wall. The motor is accessible for inspection and maintenance from inside the room by a convenient access door, but is protected from the weather by a sheet metal cover. •

Flexible Two-Position Bucket

The Caterpillar Tractor Company, Peoria, Ill., is now including a two-position bucket with adjustable pitch and a deeper bowl as standard equipment for its Model HT4 shovel. This improvement, it is reported, will enhance the flexibility of the unit for either excavating or stockpiling applications.

The two positions may be achieved



by changing the removable pins on each side of the bucket to either the forward or rear hinge point. The forward hinge point for stockpiling gives a quicker tilt-back and less spillage because of a 10-deg. rack-back at the

ground line while a simple adjustment connecting the bucket to the rear hinge point retains the former digging and dumping angles desirable for excavating work. Redesigned digging teeth are available for the shovel buckets. •



Elevator Attachment For Motor Graders

A newly designed elevator attachment for motor graders with a rated capacity of 1,200 cu. yd. per hour is now available through Allis-Chalmers dealers. This unit, said to expedite side-casting or truck-loading operations, is designed for application to the Allis-Chalmers Models 78-h.p. AD-30 and 104-b.h.p. AD-40 motor graders. It is also applicable to the two preceding models, AD-3 and AD-4. This new unit was developed by the Hancock Manufacturing Company, Hitchcock, Tex.

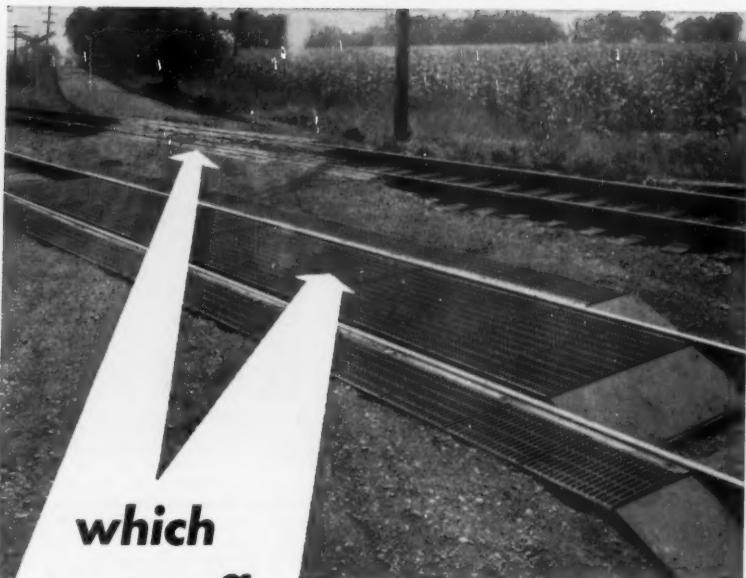
The main frame, including a heavy-duty box-type plow beam, is a single unit which is mounted quickly and easily at three points on the grader. The plow beam is adjustable for different positions of the standard 30-in. disc and also has adjustments for wearing positions.

The live power take-off is directly connected to the engine drive shaft

through V-belt sheaves to the heavy-duty clutch. This drives the 42-in. wide conveyor belt. The length of the conveyor is 19 ft. with a 3-ft. extension available as an extra. The conveyor can be shortened to 16 ft. by removing a 3-ft. length. The conveyor is hinged and folds at the center to a vertical position for transit.

Controls for operating the plow beam, and raising and lowering the conveyor at the drive roller end, tail roller end, and the hinged center are convenient to the operator.

An exclusive two-way spiral cleaner carries dirt out both sides. The cleaner is driven by the conveyor belt to eliminate transmission problems. A V-type cleaner keeps the dirt from between the belts. The carrier bearings are sealed double ball-bearing rollers. The head and tail pulleys are of a self-cleaning open type, crowned at the center and mounted on heavy-duty, self-aligning roller bearings. •



which
pays off

Grating by BLAW-KNOX

in less track maintenance and more public goodwill?

You can readily judge which pays off—when you compare the beaten up, old-fashioned wood crossing with the smooth, modern steel crossing, which will last as long or longer than the rails.



To get more complete information, write for your copy of new Bulletin No. 2448... or send your dimensional sketches for a quotation.

GRATING APPLICATIONS

crossings • walkways • running boards • steps • tower platforms • fan guards • shelving • floors • catwalks • stair treads • and many other uses for versatile steel grating

CROSSINGS OF BLAW-KNOX ELECTROFORGED® STEEL GRATING

- are easily installed and maintained—takes only two men to remove sections for tamping tracks, cleaning ballast, renewing ties
- provide good drainage, permit quick evaporation of snow and water, are easily kept clean
- stand wear and tear of vehicle traffic
- provide quiet, smooth crossing for trains

Blaw-Knox Railway Equipment

Distributor—East of Rocky Mountains
Railroad & Industrial Products Company
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H. S. Russell—R. S. Russell

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The Milliken Company, Roanoke, Virginia
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BLAW-KNOX COMPANY

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BLAW-KNOX EQUIPMENT DIVISION
RAILWAY EQUIPMENT DEPARTMENT



Supply Trade

David D. Frank has been appointed director public relations of **Montreal Locomotive Works**. He was formerly a member of the public relations department of **American Locomotive Company**.

E. C. Buehrer Company, 527 Folsom street, San Francisco, has been appointed sales representative, San Francisco territory, for **Nutting Truck & Caster Co.**

A. W. Leet & Associates, Inc., sales representatives for **Mercury Manufacturing Company**, have moved to new and enlarged quarters at 16856 Meyers road, Detroit.

William G. Gray, formerly associated with **Pittsburgh Steel Company** and **Union Asbestos & Rubber Co.**, has been appointed manager railway sales for **Pyle-National Company**.

J. F. Runge, manager of the New York sales office of **Safety Car Heating & Lighting Co.**, has been promoted to electrical engineer, and has been succeeded by Harry S. Clarke, sales representative at Chicago. John E. Zulauf, service engineer in the eastern district, has been transferred in the same capacity to Chicago.

The **Railway Maintenance Corporation**, on March 1, transferred sale and manufacture of RMC rail joint packing to the **Zonolite Company**, Chicago.

The Nickel Cadmium Battery Corporation has appointed Theodore Ulrich Chicago district manager, sales and service. He was previously sales engineer for the **Minnesota Mining Company**.



WALT W. HUTCHINSON, district manager of the Railway division of the Dayton Rubber Company, at Cincinnati, who has been appointed field sales manager of that division at Chicago.

Railway Officers

AKRON, CANTON & YOUNGSTOWN. — F. W. Jones, chief rate clerk—traffic department, has been promoted to chief of tariff bureau at Akron, Ohio.

CANADIAN NATIONAL. — P. F. Padberg has been named general storekeeper at Moncton, N. B., succeeding J. B. Fraser, who has been transferred to Winnipeg. Mr. Fraser replaces Wilfred Huddleston, who has been appointed assistant general

storekeeper at Toronto. William Long has been named assistant general storekeeper at Winnipeg.

Robert D. Armstrong, associate comptroller, has been appointed comptroller at Montreal, succeeding T. J. Gracey, who will retire under pension rules of the company on March 31. A photograph and biography of Mr. Armstrong were published in *Railway Age*, April 20, 1953, page 108.

Alexander H. Hart, assistant solicitor, has been named special assistant in the traffic department.

A. E. Spearing has been appointed assistant director of investigation at Montreal.



NEW YORK, ONTARIO & WESTERN. — Lewis D. Freeman, whose appointment as trustee of the NYO&W has been confirmed by the Interstate Commerce Commission, as reported in *Railway Age*, March 15, page 77.



Higher Ratio: 'Payload to Dead Weight' with Differential Air Dump Cars

Differential design and construction skillfully combine greatest strength with lightest possible weight. Saves motive power, fuel, maintenance. Dead weight is an enemy of economy. *Differential makes the difference!* But that isn't all!

The automatic, either side dumping design — by air power is safer, faster — means still more economy. No matter what loose material there's 'more payload to dead weight' — more all around economy and lasting satisfaction in Differential Air Dump Cars.

Differential Products Include: Air Dump Cars, Locomotives, Mine Cars, Mine Supply Cars, Rock Larries, Mantrip Cars, Dumping Devices and Complete Haulage Systems.

DIFFERENTIAL STEEL CAR COMPANY
FINDLAY, OHIO
SINCE 1915 — PIONEERS IN HAULAGE EQUIPMENT

CHICAGO & NORTH WESTERN. — K. F. Zimmerman has been named district traffic representative at Seattle.

DENVER & RIO GRANDE WESTERN. — R. C. Cavness has been appointed industrial engineer at Denver, succeeding C. M. Lightburn, deceased. Charles Wilcox succeeds Mr. Cavness as assistant industrial engineer.

GALVESTON WHARVES. — F. G. Robinson has been appointed traffic manager at Galveston, Tex.

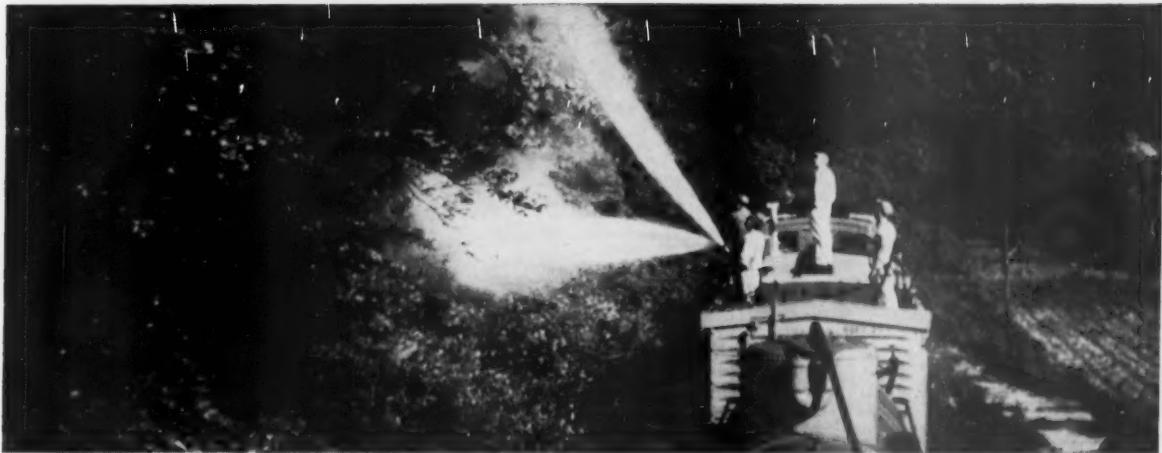
GRAND TRUNK WESTERN. — G. M. Young has been appointed general storekeeper at Battle Creek, Mich., succeeding W. A. Charles, whose appointment as manager of stores for the Canadian National at Montreal was reported in *Railway Age* March 15.

GREAT NORTHERN. — S. J. Anderson, assistant general freight agent at Duluth, has been transferred to Portland, Ore., to succeed C. A. Gerken, who died March 7. F. J. Loughney, general agent at Cleveland, replaces Mr. Anderson, while J. E. Burns, traveling freight agent at Kansas City, succeeds Mr. Loughney.

LEHIGH VALLEY. — Arthur Van Reed, acting superintendent of police, has been appointed superintendent of police at Jersey City, N.J., succeeding Richard P. McKernan, deceased.

MIDLAND CONTINENTAL. — Thomas H. Smith has been appointed general agent at Clinton, Iowa.

MINNEAPOLIS & ST. LOUIS. — Roy W. Nelson, resident vice-president at New York (*Railway Age*, September 14), has been elected vice-president—traffic at Minneapolis, suc. (Continued on page 70)



Weeds-Grass-Brush?

We can solve **YOUR** weed control problems with
the RIGHT chemicals and application service

Our complete line of proven weed, grass and brush killing chemicals includes:

Atlacide Liquid	Methoxone-Chlorax
Atlacide Spray Powder	CMU
Chlorax Liquid	Brush Killer
Chlorax Spray Powder	Atlas Contact
TCA-Chlorax	Atlas "A" Arsenical

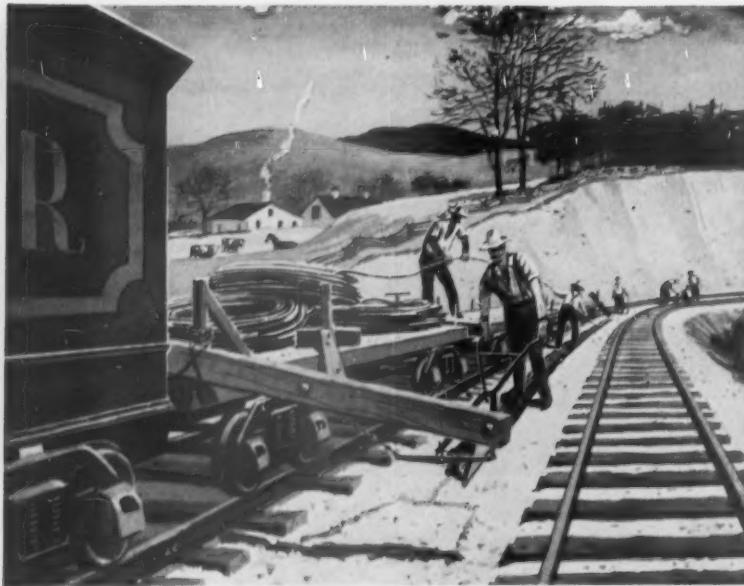


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How a locomotive-drawn plow was used to lay the first underground cable

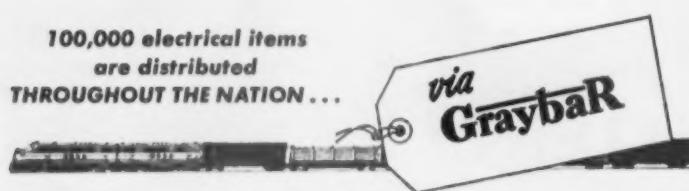
Back in 1882, engineers of the Boston and Providence Railroad in Massachusetts decided to experiment by laying a 21-conductor cable in the ground. Connecting a plow to an outrigger on a flat car, they coupled up a locomotive and plowed a five mile trench between Attleboro and West Mansfield. Inside a $\frac{3}{4}$ " lead pipe they ran their gutta percha insulated cable . . . and it worked.

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100,000 electrical items
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THROUGHOUT THE NATION . . .



OFFICES AND WAREHOUSES IN OVER 100 PRINCIPAL CITIES

(Continued from page 68)
ceding **Arthur C. Leake**, who will retire April 1.

READING. — **Frederick W. Biltz**, assistant chief engineer, has been elected chief engineer at Philadelphia, succeeding **Edward L. Gosnell**, who has retired after 46 years



Frederick W. Biltz

of railroad engineering work. **Harry F. Smith**, assistant to chief engineer, succeeds Mr. Biltz as assistant chief engineer.

Mr. Biltz was born in Ashland, Pa.,



Harry F. Smith

and joined the engineering department of the Reading as levelman in 1917 after being graduated from Lafayette College. He was appointed assistant chief engineer in January 1946.

TOLEDO, PEORIA & WESTERN. — **M. J. Craig** and **G. F. Miller**, general agents at Keokuk, Iowa, and Philadelphia, respectively, have been appointed traffic managers at those locations.

UNION PACIFIC. — **Carl Bianchini** has been appointed general agent at Stockton, Cal.

WISCONSIN CENTRAL. — See Financial news columns (page 12).



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Okonite-Okoprene Diesel wiring is insulated with Okonite insulation — the same long-lived mineral-base rubber insulation that has been used so successfully for important electrical circuits by three generations of railroad men.

Bulletin RA-2078A gives full details of Okonite-Okoprene Type DEL Diesel Locomotive Wiring, for both conduit and exposed installations. Ask your Okonite representative, or write for your copy of this bulletin to: The Okonite Company, Passaic, N. J.

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How Lost Traffic Can Be Turned into an Advantage

For many decades railroad traffic and earnings were closely related to the ups and downs of national production. The railroads hauled practically everything that was produced; and, when production declined, there was just that much less freight available for movement. There was nothing whatever, of any consequence, that the railroads (as a whole, that is) could do to improve their traffic volume. All they could do was to wait patiently for an upturn in production; and, when that came, their traffic anemia was cured.

This dependence on the volume of national production for profitable traffic volume has vanished. So much traffic is now being moved by other agencies of transportation that—assuming the railroads have the will to compete, and costs enabling them to do so at a profit—there now exists a large reservoir of potential traffic waiting to be drawn upon, even when total national production is declining. Some measure of the magnitude of this "reservoir" is indicated by the recent report of the I.C.C.'s Bureau of Transport Economics and Statistics on actual railroad traffic volume, compared to "potential" (*Railway Age*, March 15, page 9). According to this compilation, the railroads moved only 67 per cent as much freight in 1952 as they would have moved had their "hold" on traffic in that year been as firm as it was in 1928. The traffic "lost" to the railroads (and, presumably, recoverable at least in some degree, given sufficiently attractive rates and service) was 677 million tons—or almost half again as much freight tonnage as the railroads actually carried in 1952.

Of course, a considerable part of this tonnage was undoubtedly diverted from the rails for sound economic reasons, and is not subject to recovery. On the other hand, who can doubt that a great deal of it could be moved economically by rail, and would so move if the comparative economy of the several agencies were fully reflected in their rate structures?

It may be objected (and quite justifiably) that comparative economy of the rival agencies of transportation is never going to be reflected in their comparative rates—as long as *all* costs have to be included in railroad rates, whereas a substantial part of the true costs of other forms of transportation

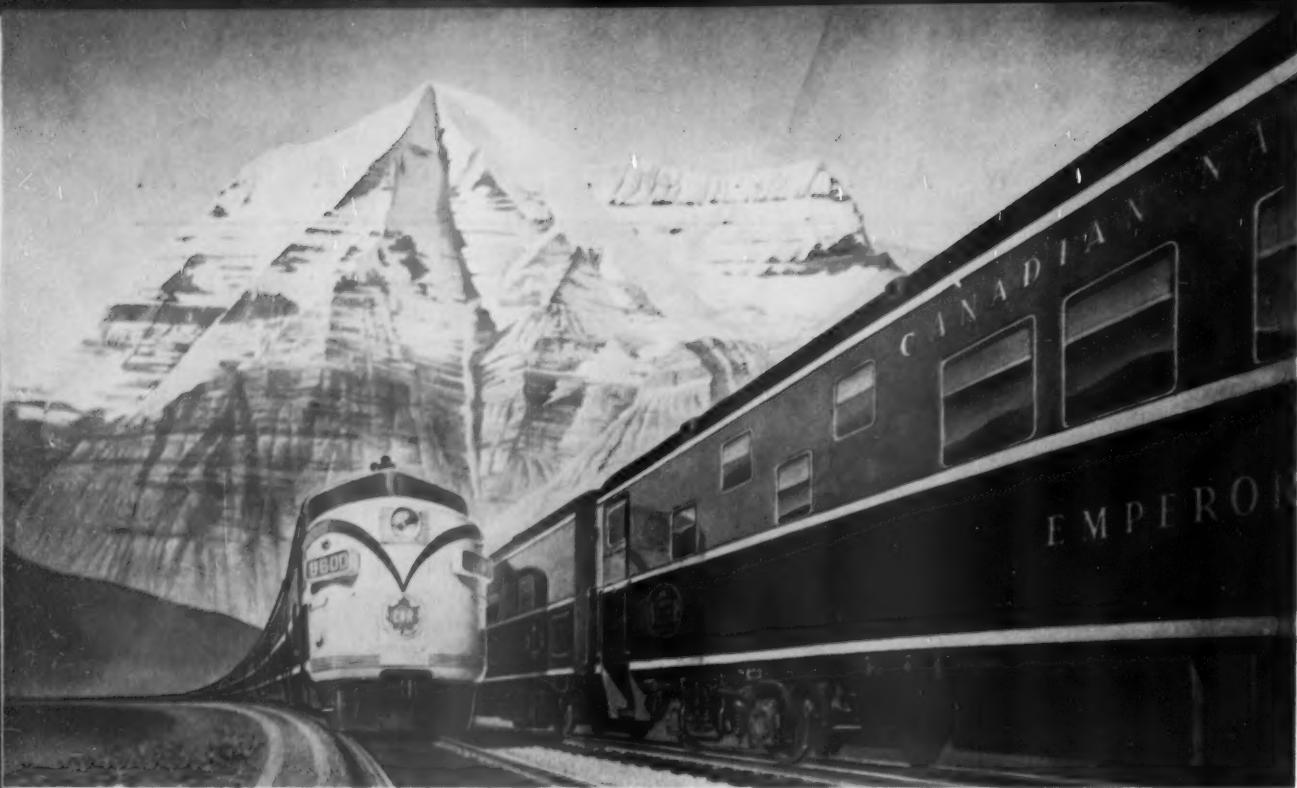
is paid by the taxpayers and is not included in their rates. However, is this situation—grossly unfair as it is—as much of a practical handicap in bidding for traffic as it seems? The I.C.C. annual report for 1953 showed average rates for truck transportation in 1952 at 5.572 cents per ton-mile, as compared to 1.43 cents by rail. With a differential as large as this, it would certainly appear that the railroads, in spite of all the political favors the trucks enjoy, still have an enormous cost advantage in bidding for higher-rated traffic—an advantage which, so far, has been used most sparingly.

There is also the possibility that an all-out effort by the railroads to use their inherent cost advantage competitively would encounter regulatory obstacles. Be that as it may, the possibility that obstacles may be interposed to circumvent an effort, otherwise desirable, certainly should not preclude the exerting of the effort. Besides, there is evidence that some of the regulators themselves realize that conditions in transportation have undergone sufficient change to justify an equivalent change in regulatory policy. For instance, a few months ago Commissioner Mitchell said:

"In my opinion, custom and usage should play no part in present day regulation. Regulation should keep pace with changes in the transportation industry. . . . In the past 20 years transportation has entirely changed, and yet we are regulating under rules and laws established 15, 20 or 25 years ago. . . . Regulation has not kept pace with changing conditions in transportation. It is ridiculous, in my judgment, that we should attempt to enforce these old laws; that we should continue to regulate under rules and decisions made by the commissions 15 or 20 years ago."

How much change may be required in the statutes before regulation can be made fully conformable to present conditions only experience can show—experience, that is, with actual commission handling of specific railroad proposals to modernize their rate structures.

It is paradoxical, but nevertheless a fact, that the loss of 677 million tons of freight by the railroads should be an element of potential strength in their present position and in their outlook for the future. After a century of practically complete dependence on the business cycle for their traffic volume, the railroads are now in a position of relative independence of the cycle. In other words—given sufficient resourcefulness in price-making, in service, in sales and in keeping their costs down—it is easily conceivable that the railroad industry could experience an upward trend in traffic, and with national production on the downward side.



How the C.N.R. Will Use \$59 Million

First fruits of largest single order in many years now rolling off the line into widely ranging service all over the system

The railroad business sat up and took notice when, in March 1952, the Canadian National requested bids for 194 new passenger-train cars at one time. Railroaders held onto their hats the following year when the road upped its sights and placed orders for a total of 302 cars—a single order from a U. S. builder for 92 sleeping cars, 17 parlor and combination parlor and meal service cars; 12 combination sleeping and meal service cars and 20 full dining cars—and a single order from a Canadian builder for 161 coaches. They really wondered what was up when, in the same year, the C.N.R. raised its order for coaches by another 57 cars.

Order Sets Record

The total of 359 cars—all of them passenger-carrying—represents an expenditure of more than \$59 million. The order was the largest in terms of dollars for passenger cars ever placed in one year by one road on the North American continent, according to C.N.R. officers.

All of the 141 sleeping, parlor and meal service units were ordered from the Pullman-Standard Car Manufacturing Company, which started delivery on January 14, and is turning them out at its Chicago passenger car plant at the rate of one a day.

To exploit to the maximum the possibilities of unit assembly in cutting costs, Pullman and the C.N.R. agreed that each type of car would be produced in succession, so all of one type would be completed before delivery

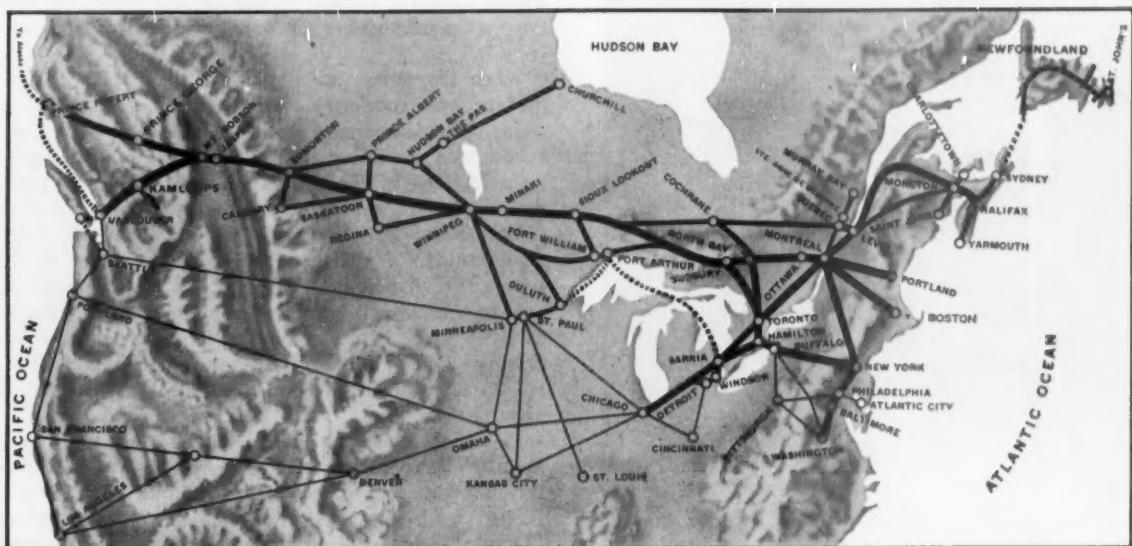
begins on the next category. Thus the 52 4-8-4 sleepers (4 section-4 double bedroom-8 duplex-roomette) will be turned out before delivery is started of the 6-6-4 sleepers. The sleeping car order should be filled by June 8, with parlor, meal service and combination units scheduled for completion by mid-July. The P-S cars are described in detail in a color-illustrated article in this issue.

Coaches Built in Canada

All 218 coaches ordered from Canadian Car & Foundry Co. are identical. This circumstance provides the manufacturer with an unusual opportunity to pare costs through standardized production techniques. Delivery started in January, when 15 coaches were turned over to the C.N.R. Since then, delivery has been at the rate of two coaches a day, with completion of the order slated for July 21. C.C.&F.'s coaches also are described in a separate article herein. An unusual feature of their manufacture is the fact that 87 per cent of their value is represented by Canadian labor and material.

In addition to the \$59 million worth of passenger-carrying cars described in this issue, the C.N.R. has ordered 30 baggage cars from the National Steel Car Corporation, Hamilton, Ont. Delivery will begin in July, to be completed by September.

The fact that the C.N.R. is the longest railroad in North America (in terms of route-miles) and third in gross revenues does not necessarily explain why it



HISTORIC CAR ORDER will give the Canadian National enough equipment to spread it about widely on its 24,000-mile system. Shown here are the main routes only, plus important connections in the U. S.

Worth of New Passenger Cars

placed a record order for passenger-carrying cars. The reasons must be sought in the status of its car fleet, in its outlook on passenger service, and in its purchasing policy.

A Backlog Situation

The depression of the thirties possibly hit Canada even worse than the U.S., because that country was then largely a primary producer serving world markets. Its largest railroad, dependent on government for the advance of new capital, could not then justify the purchase of new passenger cars. For Canada, World War II lasted almost two years longer than for the U.S. During those six years, more essential needs precluded orders for passenger cars.

As soon as the war was over, the CNR was impelled to enter the market for equipment. But large-scale purchase of cars for passengers had to wait.

First, an industrial boom of unprecedent proportions absorbed steel and other essentials at a high rate. Canadian car builders, according to CNR President Donald Gordon, "simply could not undertake the production of passenger cars for us in the volume required."

Second, a rise in freight traffic and spread of new industry demanded that available funds and materials go first into freight cars and locomotives rather than into passenger equipment.

Third, to an extent even greater than U.S. lines, the Canadian roads were denied increases in rates to keep them in step with inflation—and even today they move a substantial portion of their freight traffic on substandard rates set down in the statute books in dollars and cents and unchanged for more than half a century.

Believing that its first obligation in furnishing passenger-train equipment was to obtain enough cars to handle a rapidly growing postwar mail and express traffic, the CNR used available resources for this field largely for new head-end cars. It purchased a total of 263 units of this type in the period 1946-1953.

In addition, although passenger travel started to decline after the war, the road nevertheless "picked up" a few pieces of new equipment, from various builders, as it was able to get commitments—30 coaches in 1948, and 25 more in 1950, together with 20 new duplex-roomette sleepers.

As soon as the war was over, the road put its own car shops to work, remodeling and refitting the best of its older passenger units. This program utilized the shops to their capacity, without crowding out necessary "in kind" repair jobs. By this means there were turned out a total of 170 passenger-train cars, all of which were wholly passenger carrying. All of them of course were completely refurnished and equipped with modern running gear.

Remodeling Program Continuing

This program is continuing. Four shops—Point St. Charles (Montreal), London, Moncton and Transcona (Winnipeg)—are currently working on a program to turn out 41 modern cars, including 8 parlor; 11 sleeping; 2 bedroom-buffet-lounges; three buffet sleepers; four buffet parlors; 11 tourist cars; and two compartment cars for special service.

The majority of the cars which contain sleeping accommodations are being converted from combinations of space now outmoded in public demand to those for



CANADIAN CAR & FOUNDRY displayed construction on the 218 coaches it is producing in Montreal in special ceremonies in January, when it turned over the first completed car to the railroad.

which there is a readier sale. All of the cars in this program are being equipped with modern lighting, air-conditioning and roller bearings. Plastics are playing a big part in their interior modernization.

"Flood," Not "Trickle"

But, as President Gordon told the public last summer, these measures produced "only a trickle, when we needed a flood." For three years, the road's spokesmen say, it "shopped about" for capacity, for design, for standards and for price. It was not until early in 1953 that the management obtained firm prices and firm delivery dates for its unprecedented order.

A large factor in its decision to engage in virtual mass-buying of passenger cars was the determination to provide the carbuilders with a job large enough to support modern methods of assembly, with emphasis on efficient flow of materials and components, and de-emphasis on the piecemeal custom building technique necessary in filling small orders of specially designed equipment. In return, the road wanted a price which would reflect some of these savings.

There is nothing "blue sky" about the CNR's large passenger car purchase. It is not based upon futures. The road decided to buy the \$59 million worth of new cars after study showed the volume and composition of its existing passenger traffic required them.

The CNR had the choice, reports Mr. Gordon, of being "functional or fancy." It could develop "a glamor type of service" on a few of its most important runs; or it could provide "a reasonably fast, comfortable service on all principal trains, without adding expensive frills." The road decided to be functional—"to obtain as much new modern equipment as we could get for our money,

and to spread it around throughout the system, so that the maximum number of our travelers would benefit from it."

When the orders are completed, the road will have modern and comfortable equipment on all main-line trains. The improvement will be passed along to the branch and secondary trains, too, because some equipment replaced by the new cars will be used to upgrade the consists of those runs. The new black-gold-green color scheme introduced with the new cars is being made standard for all passenger train equipment on the system, which will get the "new look" at the next repainting. Mixture of the new equipment with existing cars, therefore, will not disturb harmony of train appearance. The new hues replace the green which has been traditional with the CNR and absorbed properties since about 1900.

In ordering and assigning the new cars, the road held to the goal of spreading the benefits as widely as possible. The concept "main-line train" by no means is limited to runs on the transcontinental line between Montreal and Vancouver on the one hand, and Montreal and Halifax on the other, or to well-patronized international trains serving Chicago, New York and Washington. It includes scores of trains carrying but one sleeping car, with which perhaps must be combined eating services as well. Thus the first of the new P-S sleeping cars delivered to Canada was placed into service on January 23 on the 317-mile run between Montreal and Chicoutimi, a one-car sleeper line, serving the mining, paper making and aluminum processing "North country" at the head of the Saguenay.

Such services need as many kinds of facilities as possible packed onto one car, with emphasis on low-cost space. That is why 52 of the new sleepers combine open sections, double bedrooms and duplex roomettes; and 20 more combine sections, double bedrooms and straight roomettes. Four of the sleepers combine sections with eating facilities, and 6 more add a double bedroom and more extensive meal space. Similarly, 11 of the parlor cars are arranged for meal service.

Illustrating the wide range of coverage to be provided by the new equipment are the proposed assignments of these 11 cars. Two parlor-buffet cars will be assigned to the Grand Trunk Western between Chicago and Toronto. The 9 "parlor-grill" units will run:

- 2 Halifax-Sydney
- 2 Saint John (N.B.)-Cape Tormentine
- 1 Toronto-Niagara Falls
- 2 Winnipeg-Saskatoon
- 2 Winnipeg-Port Arthur

Low-Cost Space Provided

Noteworthy is the fact that, of the 104 sleeping cars ordered, 82 include sections providing upper and lower berths—with refinements not included in the older conventional type. A total of 52 cars have duplex roomettes, which take a rate only 10 per cent higher than that of a lower. The slightly larger roomettes will be used largely in heavy volume international runs, and between Montreal and Toronto.

Thus, while more expensive accommodations are liberally available throughout the new fleet of sleeping

"We knew what the public wanted;

We took the precaution of finding out before we ordered."

The management of the Canadian National has no illusions about the passenger business as an earner of profits. It believes the railroads will have a hard job building up their present volume. It is convinced the task will be easier if they are allowed to abandon the services for which there exists no profitable market and to concentrate efforts in the limited field where there is effective *economic* public demand.

While the CNR has not yet drawn final conclusions about mileage categories, population levels and other specifications of a profitable passenger service, its findings so far point to a service for Canada as a whole which puts price before frills, and the many before the few.

To provide such a service it must know: "What do people want—and what are they willing to pay?"

Market Survey.—About a year ago the road hired the Saunders Marketing Research & Canadian Opinion Co. (a Gallup affiliate) to make "a survey of the travel market" as it related to the railroads. The sample of 4,000 people queried were a mathematical "microcosm" of the entire Canadian population—as travelers. (The sample was limited to those who traveled 100 miles or more, by any means, within the previous year.)

The survey was "statistically immaculate." The questions were selected only after rigorous field testing to probe their success chiefly as discoverers of price sensitivity of the public—i.e. the elasticity of demand for railroad passenger service of various types. The object of the questions was not to find out what the public would like to have, but what it would pay for. Thus, people weren't asked if they

thought dining car meals are too high—because they would reply "yes" if the price were anything above zero. Instead the question was planted within a framework of questions about inflation and meal prices elsewhere.

Categorizing Travelers.—Since each person queried was asked how he traveled the year before, and how far, the survey automatically divided railroad patrons from the rest of the population; long-haul travelers from short, car owners from non-automobilists; and expense-account travel from pocketbook travel.

There came some surprises about travel habits. One out of every 8 adults questioned had never ridden on a train. Some eight per cent of the sample reported using bus service for journeys of 400 to 1,000 miles and an additional eight per cent for 1,000 miles and over. These bus patrons constituted a group more than a fourth as great as the number of railroad patrons in the sample for the same distance.

The survey will be especially useful in pricing experiments which the CNR is now considering. At the same time, it gives no clear-cut okay for fare reductions everywhere. Economy was the chief motive in selecting mode of transportation for only 36 per cent of the survey's respondents. (Thus a substantial number of bus patrons said they'd continue to sit up all night to ride long-distance buses, no matter what the railroads charged.) But coupled with other factors, it was a major consideration. Of railroad travelers, 49 per cent said they didn't use the diner. Of those who use the diner now, 72 per cent said they would prefer simpler service to higher prices.

cars (including even two cars containing only compartments, designed for special party travel when not on regular assignment), the new fleet is obviously designed to serve the volume market, which the CNR believes will provide its greatest patronage in the future.

Since the road's investigations show that a majority of the traveling public thinks dining car meals are too costly and says it is willing to forego frills and large portions in favor of keeping prices down, the CNR will watch with particular care the effectiveness of the six "dinettes" in the P-S order, which are equipped either to supplement full dining cars or to service a complete train load. These "drug store counters on wheels" are actually more versatile than they look at first glance, and are equipped to serve full hot meals of the simpler variety. Besides furnishing lower priced meal service, the dinettes have the additional advantage of being available for snacks during most of the day and evening.

Publicizing the Fleet

Since delivery of \$59 million worth of new passenger carrying cars is a big event for even a big road, the CNR plans to take advantage of 1954 as the year in which to acquaint the public with all of its services through promotion of the new equipment. Most of the forthcoming booklets and advertising copy assume that most people have little familiarity with the various types of sleeping car space, parlor car facilities, meal service and de luxe coach appointments, and that these categories

must be publicized individually and simply. Major facets of publicity will be:

Reprints of a four page presentation of main car types, in four colors, from the December (1953) Canadian National Magazine—Total of 175,000 (142,000 for employees, and 33,000 for public distribution).

Booklet featuring each type of equipment separately, in four colors—65,000.

Leaflet on the "4-8-4" plan sleepers, in two colors—150,000 English; 50,000 in French.

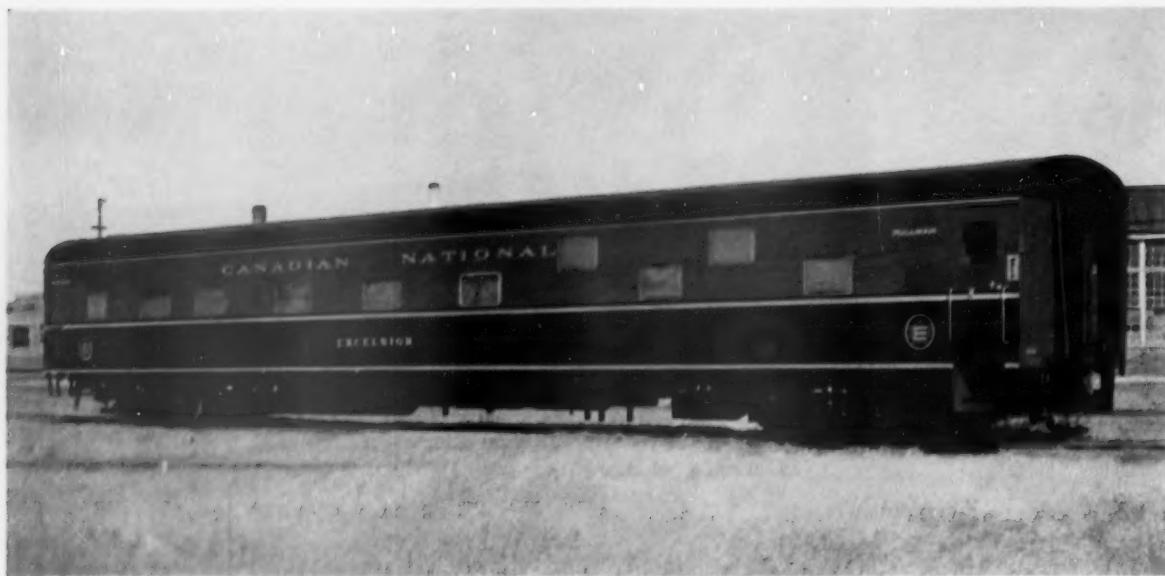
Similar leaflet on 6-6-4 sleepers—8,000 in English; 2,000 bilingual.

Separate leaflet on coaches only, in two colors—200,000 English; 50,000 in French.

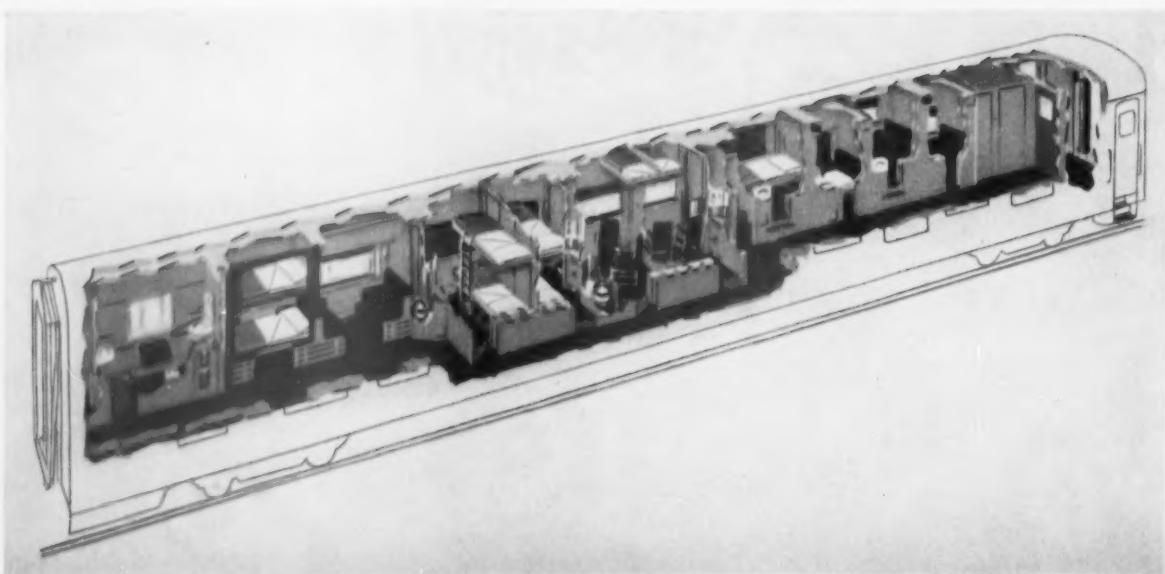
Posters in four colors for station and other railroad facilities and travel agents—1,000.

CNR advertising in U.S. and Canadian magazines will feature the new equipment in four-color illustrations.

The fact that the new cars are being delivered one by one, over a seven-month period, and are being distributed all over the system, obviously complicates the job of encouraging press coverage and planning publicity. There is no one "date" on which to hang ceremonies, and no one train to celebrate. Nevertheless, when the first P-S sleeper came into Canada, it was given a press-radio-TV preview in Montreal, Toronto and Winnipeg before going into service. On the occasion of delivering the first coach, C.C.&F. gave a "show," inviting the press and dignitaries to its shops in Montreal. Now in the talking stage on the railroad is the possibility of making up a solid train of representative cars of the new fleet, to be placed on public exhibit at key points.



EXTERIOR COLOR SCHEME of all cars conforms to new CNR standards. Decal lettering is employed.



FOUR SECTIONS, four bedrooms and eight duplex room-ettes are incorporated in 52 of the CNR's new sleeping cars.

Color illustrations courtesy Pullman-Standard Car Manufacturing Company

13 Car Types Meet Traffic Needs

Initial deliveries of 141 passenger units are now being made by Pullman-Standard for service all over CNR system

The Canadian National, is now taking delivery of the first lot of 52 sleeping cars from the Pullman-Standard Car Manufacturing Company, which expects to supply by early summer, 40 additional sleepers, 12 combination

sleeping and buffet cars, and 20 meal-service cars. Details of the various types are shown in a table. This equipment, designed by Pullman-Standard Passenger Division engineers and stylists in collaboration with the



PARLOR CAR interior. Six of these cars will be built—each car seating 34 persons.



DINETTE seats 26 persons. Six such cars, which have crew quarters at one end, have been ordered.

railroad, is especially tailored to CNR requirements and will bring smart, new comfort standards to the road's passenger service, system wide.

There are 13 different floor plans (five typical plans are illustrated) which incorporate the latest ideas in room arrangement and equipment for conventional parlor-car and sleeping-car travel, also special dining facilities and business-car service. For example, each of the 52 4-4-8 sleepers contains the new design Type-S bedrooms, open sections, and the well-proved duplex roomettes. The 20 6-4-6 sleepers have Type-S accommodations throughout in roomettes, bedrooms and open sections. Other special arrangements are the bedroom-roomette and compartment-drawing-room cars, there being six of each, all with Type-S sleeping accommodations.

The four buffet-sleeping-dining cars are designed for low-cost travel and include eight open sections, one bedroom and a 16-chair dining room served by a compact kitchen-pantry. The two-compartment, two-bedroom buffet-lounge cars include a 36-ft. lounge section seating 28 and have a separate porter's room. The sleeper equipment is rounded out with six 10-open-section, one-bedroom, buffet cars, in which are spacious men's and women's dressing rooms.

The six roomy parlor cars have individual revolving chairs for 34 passengers each. Nine buffet-parlor cars have one parlor section, each, seating 20, plus a 16-seat dining alcove, served by a compact kitchen-pantry. The parlor-buffet car arrangement includes two parlor sections seating 7 and 15, respectively, an eight-seat dining section, and an all-purpose buffet.

The 14 dining cars seat 40 passengers each, with a 4-2 table arrangement and a roomy aisle for less congested service. In the six unusual dinette cars, a lunch counter extending two-thirds the length of each car seats 26. There is a 13-ft. kitchen and the back bar extends the full length of the counter. Crew's quarters for six are also included. The two seven-compartment, kitchen-buffet-lounge cars are arranged as business or

special-purpose cars. Each accommodates 14 passengers and a crew of two. A dual-purpose buffet-lounge room, seating eight, is served by a compact kitchen.

Standard Type-S Rooms

The Type S rooms referred to are essentially the same as those in the Louisville & Nashville sleepers described in *Railway Age* April 6, 1953. They represent the composite results of intensive analysis of travelers' requirements as well as operational conveniences requested by the Pullman Company and the CNR operating department.

Privacy and comfort are emphasized. The various floor plans are arranged so that the more expensive bedrooms, compartments and drawing rooms are near the center of the car for smoother riding.

Room decorations include harmonious colors, soft carpeting and fine fabrics. The location of the triangular

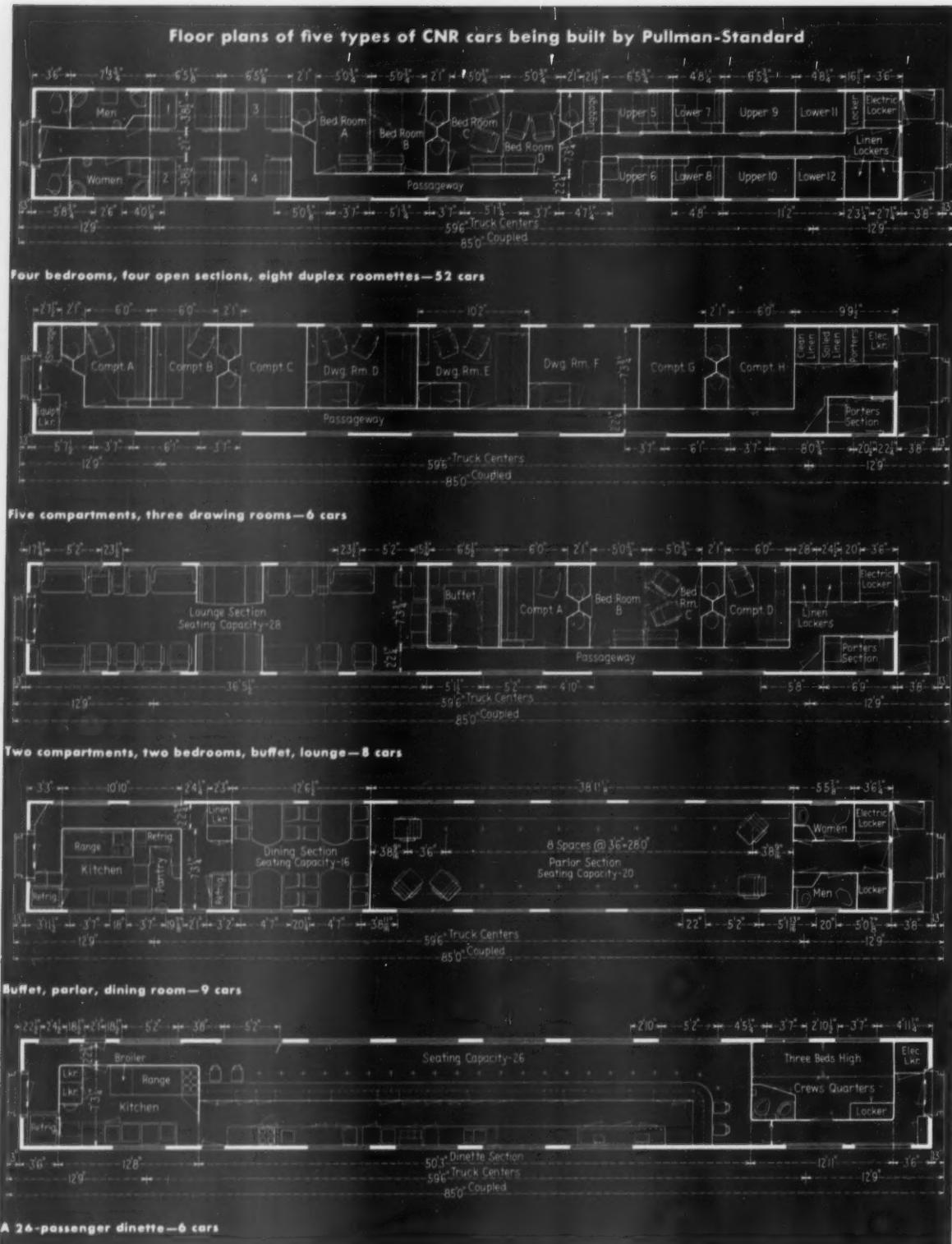
WEIGHTS OF CNR CAR TYPES BUILT BY PULLMAN-STANDARD

Number of cars	Estimated weight, lb.*	Type of accommodations
52	138,500	4-bedroom, 4-section, 8-duplex roomette
20	139,514	6-roomette, 4-bedroom, 6-section
6	129,389	Parlor car, seating 34
6	140,341	5-bedroom, 10-roomettes
6	135,428	5-comp't., 3-drawing room
4	137,353	8-section, 1-bedroom, dining room, kitchen, pantry
8	127,713†	2-comp't., 2-bedroom, buffet, lounge
9	135,918	Buffet, parlor, dining section
6	130,175†	Dinette car, seating 26
2	132,047	Parlor, buffet, dining section
14	142,170	Dining car, seating 40
6	136,691	10-section, 1-bedroom, buffet
2	140,914	7-comp't., kitchen, buffet-lounge

141

*Includes 40,600 lb. weight of two trucks.

†Includes 40,157 lb. truck weight without generator drive.



lavatory and dressing mirror inside the room, instead of in the annex, is a much-desired convenience for dual room occupancy.

Daytime travel convenience is improved with the

advent of the Type-S rooms. In the bedroom, for instance, one bed folds into the partition and the other raises into the ceiling to allow real comfort in the use of two lounge-type folding chairs. Chairs can be moved to view the



COLORFUL bedroom in one of the new CNR sleepers shown made up for day occupancy.



SLIDING PARTITION allows the conversion of adjoining bedrooms into a large double occupancy room.



LOUNGE SECTION of one of eight two-compartment, two-bedroom buffet lounge cars. Lounge seats 28 persons.



FOURTEEN DINING CARS seat 40 persons each. Typical color arrangement is shown here.

countryside, for card playing, writing or dining, or stored under berths during night occupancy.

The compartments and drawing rooms also have lounge-type folding chairs as well as full-length convertible sofas. The compartment has one chair and the drawing room two. The Type-S roomette and open sections embody basic time-tested designs for economical and comfortable accommodations.

Air Cooling and Heating

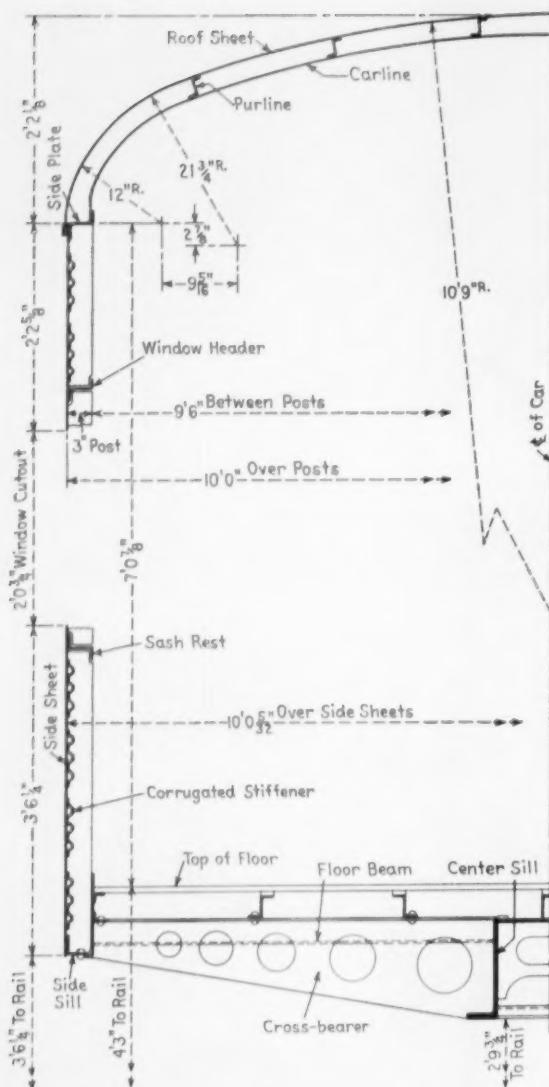
Plenty of conditioned air is provided in each type of car, using high-capacity, Freon air-conditioning apparatus and controlled air exhaust. Eleven of the 13 types of cars have Frigidaire air-cooling equipment rated at 7 and 8 tons' capacity, depending upon individual car requirements. The Trane air-conditioning systems in the diners and dinette cars are rated at 8 tons' cooling

capacity. Bedrooms, compartments, drawing rooms and open-section compartments have perforated-type air diffusers.

Heating coils are used in conjunction with the air-circulating system to provide tempered air in the car during winter months. Radiant panel-type heating with finger-tip control is used in all sleeping rooms of 104 cars.

For crew convenience, kitchens have their own separate air distribution systems by which cool air is directed into the areas requiring maximum heat dissipation. Ceiling exhaust fans are installed as required by the size of the kitchen and amount of heat developed.

To assure safe, palatable drinking water, the Everpure Superchlorination method is used in all cars. Taclor tablets are inserted while filling tanks and Everpure water purifiers remove chlorine from water used in water coolers and in dining cars for cooling and drinking only.



CROSS SECTION of the cars being built by Pullman-Standard. Framework and exterior sheathing are of corrosion-resistant, high-strength, low-alloy steel. Ribbed rubber-type floor covering is employed in vestibules and on car steps to insure passenger safety.

Eleven of the thirteen types of cars are equipped with Safety 25-kw. axle-driven Genemotors providing 115-volt d.c. electric power for air conditioning, lighting and kitchen loads. The compartment-bedroom-buffet-lounge cars and the dinette cars have Waukesha diesel engine-driven generator units to produce 220-volt, 3-phase alternating current. These units, rated at 28.1 kw. each, are self contained and make it possible to park the cars for considerable periods, when necessary, without reliance on an external source of electric power. Both fluorescent and incandescent types of lighting are used, the illumination and style of fixtures being custom-designed for the various types of rooms and passenger accommodations.

On nine of the thirteen car types, the electric locker is adjacent to the car vestibule. This permits entrance into the locker from either side for safety purposes, an arrangement recommended by the American Railway Car Institute, Passenger Car Design Committee. As a safety measure, access to the 220-volt electric switchboards is restricted to qualified maintainers, with trainmen operating only start-stop switches and thermostat controls.

Since the car sides do not have extension skirts, no protective cover is applied over the vestibule steps which are of the stationary type. A ribbed rubber-type floor covering is used throughout vestibules and on car steps for added passenger safety.

Construction of Car Bodies and Trucks

The car bodies are of Pullman-Standard girder-type construction, with corrosion-resistant, high-strength, low-alloy steel framework, and exterior sheathing. The exterior sides and roof are smooth, being painted to match the CNR standard color scheme. Decal-type lettering is used on the car exteriors.

All 141 cars are being equipped with Commonwealth four-wheel, outside-swing-hanger, all-coil-spring type trucks which include the large diameter central bearing, friction-type vertical shock absorbers and 6-in. by 11-in. journals with Hyatt roller bearings. HSC brake equipment is installed with A.S.F. unit-cylinder clasp brakes.

The decorative treatment achieves desired results with a minimum of different paint colors and fabrics. In the 104 sleeping cars, for example, only eight paint colors and five seat covering fabrics are used, in conjunction

DECORATIVE COLOR TREATMENT OF TYPICAL SLEEPING ACCOMMODATIONS

	Open sections	Straight Roomettes	Bedrooms	Compartments	Drawing rooms
Ceiling color	Light cream	Light cream	Light cream	Light cream	Light cream
Wall color	Medium beige	Light gray	Light blue	Medium green	Medium turquoise
Seat covering	Blue fabric	Red fabric	Rust fabric	Green fabric	Rust and turquoise
Window capping	Brown plastic	Brown plastic	Brown plastic	Brown plastic	Brown plastic
Window shades	Blue facing	Rust facing	Rust facing	Rust facing	Rust facing
Floor covering	3 brown tones	3 blue tones	3 blue tones	3 brown tones	3 brown tones
Annex:					
Walls	—	—	—	—	—
Wainscot	—	—	—	—	—
Floor cover	—	—	—	—	—
Hopper lids	—	—	—	—	—
Berth curtains	Rust	Red covers	—	—	—



ONE OF FIRST of 52 four-bedroom, four-section, eight-duplex-roomeette sleeping cars delivered to the Canadian National, all of which should be in service by early summer.

with two colors of window-shade material and two carpet colors. Nevertheless, each type of sleeping-room accommodation has a distinctive decorative treatment and, in the actual car, it appears as if many more colors were used as a result of the color distribution.

Stock Requirements Reduced

This method of using a minimum number of colors, fabrics and other materials reduces the stock requirements for maintenance and replacements. It also aids in more economical purchasing due to requiring fewer items in larger amounts than would otherwise be possible.

In general, the tops of luggage shelves and shoe

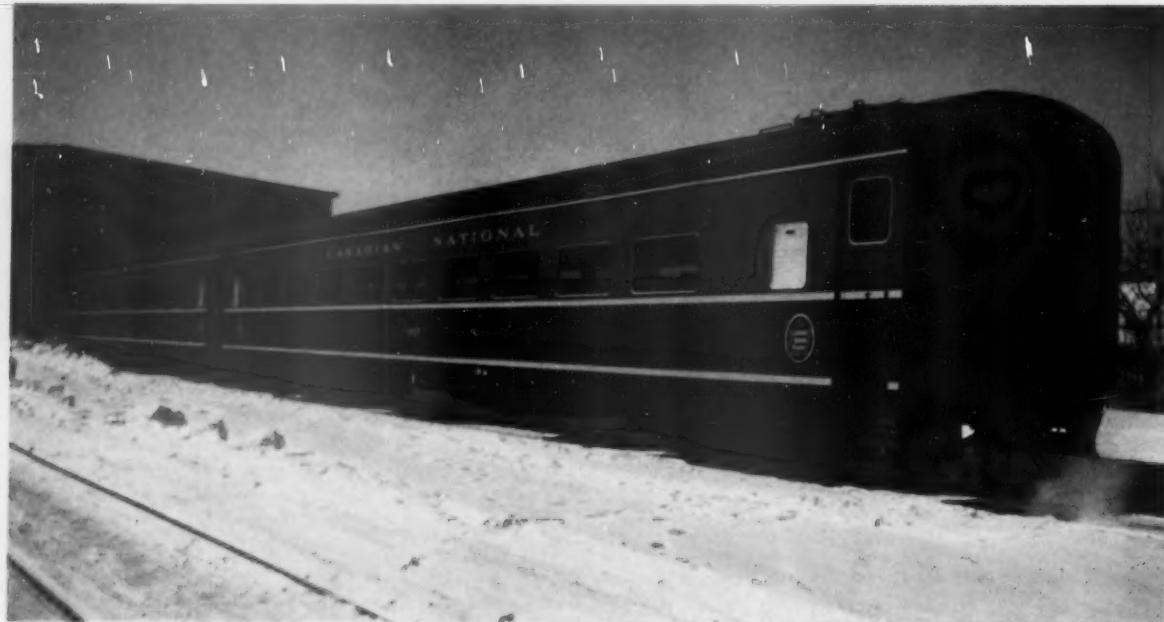
lockers are finished in gray linoleum. Window capping in sleeping rooms and open sections is brown molded plastic, which always makes a comfortable arm rest owing to the panel heating system. In the remainder of the car, the cappings are laminated plastic Pearlescent Formica.

Heater pipe guards throughout are unpainted stainless steel, as are all Pyramid snap-on moldings in sleeping rooms. Door casings at entrance to sleeping accommodations are satin finish aluminum. All window shade backing is aluminum color. Interior color schemes of several car types are shown in the illustrations. More details of the various color combinations are presented in the table on page 82.

PARTIAL LIST OF MATERIALS AND EQUIPMENT ON THE 141 CARS BUILT BY PULLMAN-STANDARD

Trucks	General Steel Castings Corp., Granite City, Ill.
Wheels	Baldwin-Lima-Hamilton Corp., Philadelphia. Edgewater Steel Co., Pittsburgh.
Truck springs	American Locomotive Co., Railway Steel Spring Div., New York. Crucible Steel Co. of America, Pittsburgh.
Roller bearings and boxes (Hyatt)	International Equipment Co., Montreal.
Couplers and yokes	American Steel Foundries, Chicago.
Upper buffers	Dunlop Tire & Rubber Goods Co., Toronto.
Buffing devices; draft gears	W. H. Miner, Inc., Chicago.
Air-brake equipment	Canadian Westinghouse Co., Hamilton, Ont.
Brake shoes	American Brake Shoe Co., New York.
Clasp brakes (A.S.F.)	International Equipment Co., Montreal.
Hand brakes	National Brake Co., New York.
Coupler centering devices; carrier irons	International Equipment Co., Montreal.
Sound-deadening material (Fabreka)	International Equipment Co., Montreal.
Insulation, car body	Owens-Corning-Fiberglas Corp., Toledo.
Diaphragms	Gourrock Bridgeport, Ltd., Montreal.
Sash units; end doors	Robert Mitchell Co., Montreal.
Metal-covered plywood doors, panels and partitions	Haskelite Manufacturing Corp., Grand Rapids, Mich. Met-L-Wood Corp., Chicago.
Vestibule curtains, fixtures and luggage racks	Adams & Westlake Co., Elkhart, Ind.
Air conditioning equipment: Frigidaire (121 cars)	International Equipment Co., Montreal.
Trane (20 cars)	Trane Co., Chicago.
Multi-Vent ceilings, relief dampers and receptacles	Pyle-National Co., Chicago.
Air filters	Farr Co., Los Angeles.

Air diffuser grills	Barber-Colman Co., Rockford, Ill.
Batteries	Exide Batteries of Canada, Ltd., Toronto.
Blower fans; circuit breaker	Westinghouse Electric Corp., Pittsburgh.
Diesel Enginator	Waukesha Motor Co., Railway Div., Waukesha, Wis.
Generator drives (Spicer)	Holden Co., Montreal.
Genemotors; motor alternators; exhaust fans	Safety Car Heating & Lighting Co., New Haven.
Electric wire and cable	Anaconda Wire & Cable Co., New York.
Heating equipment	Vapor Heating Corp., Chicago.
Pipe insulation	Union Asbestos & Rubber Co., Chicago.
Range and kitchen equipment	Stearns Co., Chicago.
Mechanical refrigeration	General Motors Corp., Frigidaire Div., Dayton, Ohio.
Parlor and vanity chairs	Mount Royal Specialties, Montreal.
Dining chairs	Royal Metal Manufacturing Co., Montreal.
Folding chairs	Robert Mitchell Co., Montreal.
Lounge chairs	Railway & Power Engineering, Montreal.
Rubber seat cushions and backs	Goodyear Tire & Rubber Co., Akron, Ohio.
Carpet (Mohawk)	Beck & Blatchford, Inc., Chicago.
Carpet padding	United States Rubber Co., New York.
Linoleum	Armstrong Cork Co., Lancaster, Pa.
Ribbed floor covering	Samuel Moore & Co., Mantua, Ohio.
Light fixtures	Luminator, Inc., Chicago.
	Safety Car Heating & Lighting Co., New Haven.
Car number signs	Luminator, Inc., Chicago.
Water coolers	Ajax-Consolidated Co., Chicago.
	Chase Supply Co., Chicago.
Water filters	Tested Appliance Co., Chicago.
Hoppers	Crane Co., Chicago.
	Dunier Co., Chicago.
Washstands and dental laboratories	Robert Mitchell Co., Montreal.
Water tanks	Scholes Co., Chicago.
Paint	Acme Quality Paints, Inc., Detroit.
	E. I. du Pont de Nemours & Co., Wilmington, Del.
	Pittsburgh Plate Glass Co., Pittsburgh.



Color illustration courtesy Canadian Car & Foundry Co.

Coach Passengers Get a Break

218 smooth-riding, comfortable coaches flowing off the line from the Montreal plant of Can-Car at about two a day

The largest order of passenger-train cars ever placed in Canada and the largest for passenger-train cars of a single type ever placed at one time with a single builder in North America is for 218 air-conditioned first-class coaches which are now being built for the Canadian National in the Montreal plant of the Canadian Car & Foundry Co.

The overall length of the new coaches is 85 ft. 4 1/2 in. over the buffers; the maximum width, 9 ft. 11 1/4 in. over the side sheathing, and the maximum height, 13 ft. 6 1/16 in. Each coach seats 80 passengers and weighs, light, 131,000 lb. There is a vestibule at one end only.

The interior walls of the coaches are entirely without paint. Arborite, Panelyte or Dor-o-lam panels are applied to the ceiling, ends and sides. It is readily cleaned with soap and water and does not require repainting.

Four color schemes are being employed on these cars. The predominating colors are blue, rose, green and rust. In the blue scheme the prevailing color—a dark blue—is used on the wainscoting of the sides and partition, on the bulkheads and on the center ceiling. The upholstery and floor covering under the seats is also blue. In the rose cars wainscoting and bulkheads are also rose and the center ceiling panels, upholstery and under-seat floor are green. In the rust cars, the wainscoting and bulkheads are brown. The ceiling is yellow, the upholstery rust. The under-seat floor is green. In the green car the wainscoting,

bulkheads, ceiling and under-seat floor are green. In all of the cars the side ceilings, upper side walls and pier panels are gray. All curtains are tan. Aisle strips are gray, relieved with transverse bars of the under-seat color.

Each coach has a smoking section seating 28, separated from the 52-passenger main section by a partition, the wainscot of which is finished with plastic decorative panels and the upper portion of which is armorplate glass. The glass is decorated with etched horizontal bars adjacent to the aisle.

Each large side window provides visibility for two seats. The aluminum sash is glazed with a sealed unit consisting of a 1/4-in. heat-absorbing, non-glare glass pane on the outside and a 1/4-in. laminated safety pane on the inside, set in extruded rubber. Window sills are capped with the plastic decorative material. There are continuous baggage racks of aluminum. The side ceiling panels immediately above the racks are covered with stainless steel.

All seats, except those at the bulkheads, are reclining and rotating with foot rests. The arms of the seats in the smoking section are fitted with recessed ash trays. Seat cushions, backs and arm rests are of foam rubber and are upholstered in textured wool frieze.

The car body structure is of high-tensile low-alloy steel. The underframe, sides, ends and roof are built in jigs,



MAIN PASSENGER SECTION of one of the new CNR coaches as seen looking back from the smoking section.



COACH SEATS are rotating reversible to allow arrangements such as this. Backs are individually adjustable.

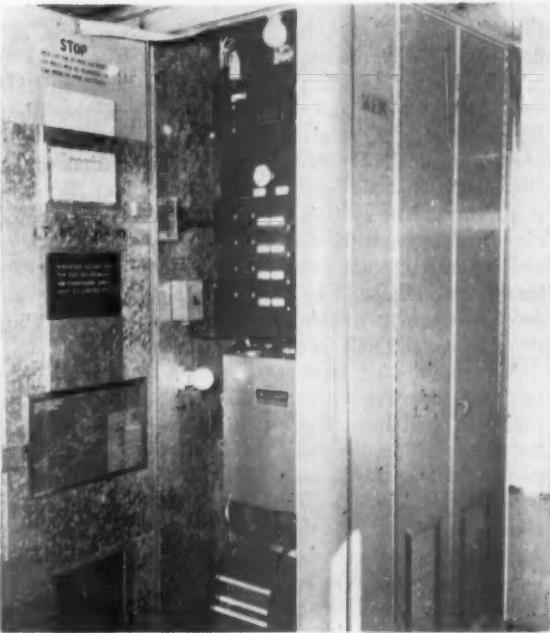
largely by welding, and assembled to form the car shell by riveting. The center sills consist of two A.A.R. sections, each weighing 31.3 lb. per ft., with top flanges continuously welded, and riveted to a Commonwealth steel platform and center-sill casting. This casting includes the buffer beam and the draft-gear and buffer pockets.

The side sills are 5-in. by 3-3/16-in. by 1/4-in. rolled zees and side-sill chords, 2 1/2-in. by 2-in. by 3/16-in. rolled angles. The bolsters are double-web weldments. Cross-bearers are single-web pressings and floor beams, 4-in. 5.4-lb. rolled channels, riveted to the side sills. The end sills are steel pressings.

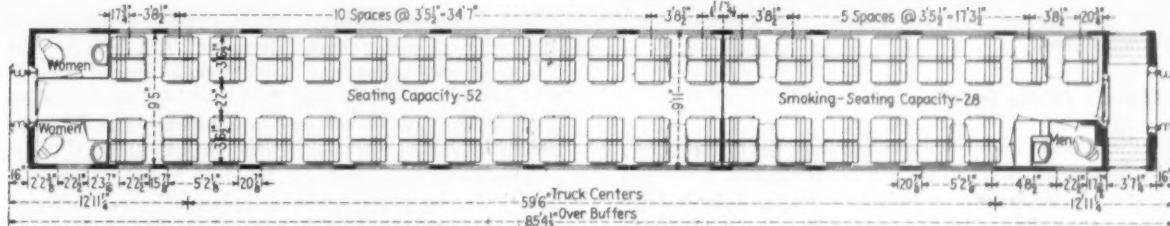
The subfloor sheets are 16-gage; the floor stringers, light section zee pressings, and the flooring, 1-in. waterproof plywood. The top surface is 3/16-in. Marboleum.

The side frames are all-welded. Each side plate consists of two 3-in. by 2-in. by 3/16-in. rolled angles. Side posts are 3-in. zee pressings. The side sheets, spot-welded to the frame, are 12 gage. Both the carlines and purlines of the roof are 3-in. zee pressings. Roof sheets are 13 gage at the sides and 16-gage at the center.

Sides, ends, and roofs are sprayed on the inside with Flintkote to a thickness, dry, of 3/16 in. Insulation is



LIGHTING SWITCHBOARD, heating and air-conditioning controls, and lamp regulator.



FLOOR PLAN of the Canadian National coach with seats for 80 passengers.



COMPLETED CAR SHELL. Side sheets are stiffened with small horizontal angles.



CAR BODY SHELLS are finished and accessories installed on these lines as

Fiberglas. This is $2\frac{1}{2}$ in. thick on the sides, ends, and floor and 3 in. on the roof.

The cars are heated by floor-level fin-tube radiation and overhead heat from coils built into the air-conditioning evaporator. Controls are divided between the Vapor and Minneapolis-Honeywell types. The Minneapolis-Honeywell controls utilize highly sensitive electronic thermostats. The radiation is from an antifreeze solution circulated through the fin tubes by motor-driven pumps and heated by steam passing through a pipe in the center of the radiator. The Vapor equipment is for modified Unizone heat, utilizing two regulators, Rador cycling thermostats, and unit-fin radiation.

Air conditioning is electromechanical. It is adjusted to supply approximately 25 per cent fresh air. The capacity is eight tons. The cool-air duct is located above the center ceiling, the panels of which are the Multi-Vent perforated type. In the smoking section the entire ceiling is perforated. The side panels cover ducts through which about $12\frac{1}{2}$ per cent of the air is exhausted from the car. Another $12\frac{1}{2}$ per cent is exhausted from the toilets and the electric locker. The recirculated air passes through a grill in the low ceiling at the smoking-section end of the car where it mixes with the fresh air and is filtered. This arrangement prevents the smoke-laden air in the smoking section from feeding back into the main passenger section through the open partition between the two sections. The equipment is divided between the Frigidaire and Trane systems.

Electric Power Supply

Electric power for air conditioning, lighting and auxiliary services is supplied by a body-mounted motor generator, driven from a car axle by a gear-and-clutch drive. The set consists of a 24-30-kw. 140-volt d.c. generator directly connected to a 220-volt 22-hp. 4-pole, 3-phase,

60-cycle induction motor operating at 1,750 r.p.m. The motor-generator set is equipped with an exciter directly connected to the main shaft, which eliminates the reverser switch. There are two 100-amp. standby receptacles for receiving standby power, and two 100-amp. battery-charging receptacles on each car.

The battery is a 114-volt, 57-cell, lead-acid type rated at 600 amp. hr. at the eight-hour discharge rate. Each battery is made up of 19 three-cell hard-rubber molded containers.

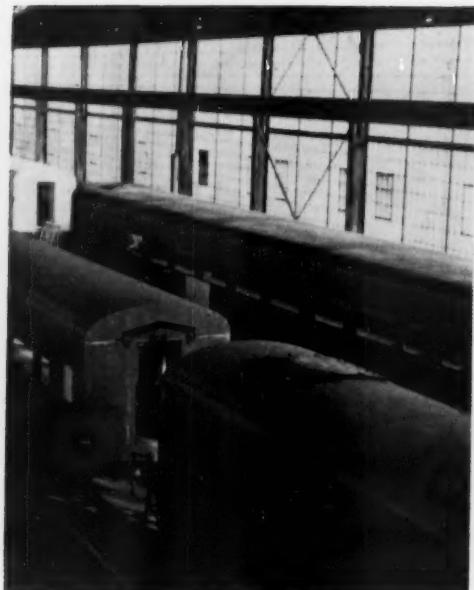
General illumination in the body of the coaches is supplied by two rows of incandescent lamp fixtures with 40-watt, 115-120-volt d.c. lamps, located on the car ceiling. The lamps are supplied directly from the regulated d.c. power source. Lamps of the same wattage are used in the vestibule. In the toilets, the water-cooler alcove, the blind end, and in the electric lockers and a.c. chamber the lamps are 25 watt of the same voltage. A 25-watt, 220-volt generator pilot light is in the electric locker.

A feature of the lighting switch panel is the dimmer switch which halves the voltage on all the ceiling lamps in the main and smoking sections at one time by connecting each of two pairs of two normally parallel circuits in series.

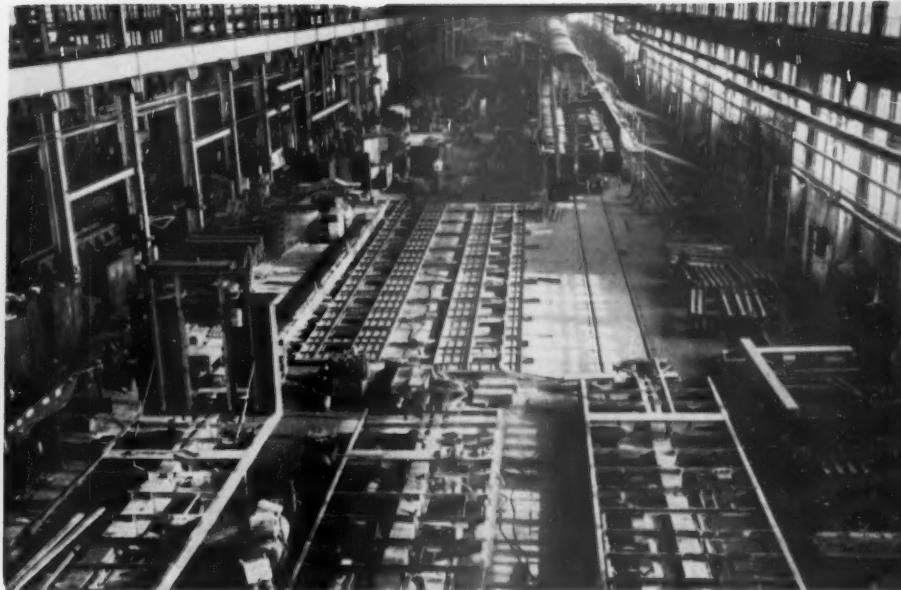
Trucks and Brake Equipment

The trucks are Commonwealth outside swing hanger type with all coil springs. The wheel base is 8 ft. The 24-in. center bearing and 1-in. thick Thermoid friction pad between the body and truck bearings tend to eliminate shimmy and loads on the side bearings. Fabreka sound-deadening material is applied in the trucks.

The trucks have unit-cylinder clasp brakes. There are two 10-in. by 12-in. brake cylinders. Grease-lubricated roller bearings are used on all axles. The air brake is Westinghouse HSC equipment with D-22-AR control



air-conditioning equipment is installed through the roof hatches.



UNDERFRAMES and ends (foreground), sides (center), and erecting line on which the CNR coaches are assembled at C.C.&F.'s Dominion plant.

valves, but without the electrical feature. Couplers are Type E. Some of the cars are receiving friction draft gears. Others will be equipped with twin-cushion rubber gears.

PARTIAL LIST OF MATERIALS AND EQUIPMENT ON THE C.C.&F. CARS

Trucks; platform and center-sill castings (Commonwealth) Canadian Car & Foundry Co., Foundry Division, Montreal

Wheels:

- Taylor Bros. Holden Co., Montreal
- Steel Peach & Tozer H. M. Long Co., Montreal
- John Baker & Bessemer Peacock Brothers, Ltd., Montreal

Axles Dominion Steel & Coal Corp., Montreal

Draft gear Canadian Cardwell Co., Montreal

Canadian Waugh Equipment Co., Montreal

Couplers, Type E Canadian Car & Foundry Co., Foundry Division, Montreal

Brakes, air; air-signal equipment Canadian Westinghouse Co., Hamilton, Ont.

Clasp brakes (A.S.F.) International Equipment Co., Montreal

Hand brakes (Peacock) Lyman Tube & Bearing Co., Montreal

Shock absorbers:

- Houdaille General Steel Castings Corp., Granite City, Ill.
- Monroe Railway Car Supply Co., Montreal

Roller bearings (Hyatt) International Equipment Co., Montreal

Roller bearings Canadian SKF Co., Montreal

Insulation:

- Sound deadening Flintkote Co. of Canada, Montreal
- Fabreka International Equipment Co., Montreal
- Fiberlite Railway & Power Engineering Corp., Montreal

Batteries Exide Batteries of Canada, Toronto

Gould-National Batteries of Canada, Toronto

Battery-charging receptacles (Anderson) Powerlite Devices Limited, Montreal

Standby receptacles; Spicer generator drive Holden Co., Montreal

Motor generator equipment Canadian General Electric Co., Toronto

Safety Car Heating & Lighting Co., Montreal

Stone Franklin of Canada, Montreal

Switch panels Devco Electric Switch Co., Montreal

Air conditioning:

- Frigidaire International Equipment Co., Montreal
- Trane Trane Co. of Canada, Toronto

Air distributors (Multi-Vent) Holden Co., Montreal

Heating equipment Minneapolis-Honeywell Regulator Co. Ltd., Toronto

Vapor Heating Co. of Canada, Montreal

Exhaust Fans Sheldon Engineering, Ltd., Montreal

Filters (Far-Air) Control Equipment Co., Montreal

Registers and grills Barber-Colman Co., Chicago

Vestibule diaphragm (Morton) Holden Co., Montreal

Trap doors (National) Consolidated Equipment Co., Montreal

Window sash (Adlake) Robert Mitchell Co., Montreal

Curtain fixtures (Adlake) Holden Co., Montreal

Sill capping (Du-O-Lam) Brigadier Engineering Products, Montreal

Curtain material:

- Fabrikoid Anthony Foster & Sons, Toronto
- Aluminum color backing Canadian Industries Ltd., Montreal

Parcel racks Robert Mitchell Co., Montreal

Seats:

- Heywood-Wakefield Railway & Power Engineering Corp., Montreal
- Econoliner Mount Royal Transportation Equipment, Montreal

Lighting fixtures (Luminator) Railway & Power Engineering Corp., Montreal

Upholstery Collins & Aikman Corp. of Canada, Montreal

Floor covering (Marboleum) Dominion Oilcloth & Linoleum Co., Montreal

Water coolers:

- Chase International Equipment Co., Montreal
- Sunroc Sunroc Co., Glen Riddle, Pa.
- Lundy Mount Royal Transportation Equipment, Montreal

Water purifiers (Everpure) Light Industries Co., Toronto

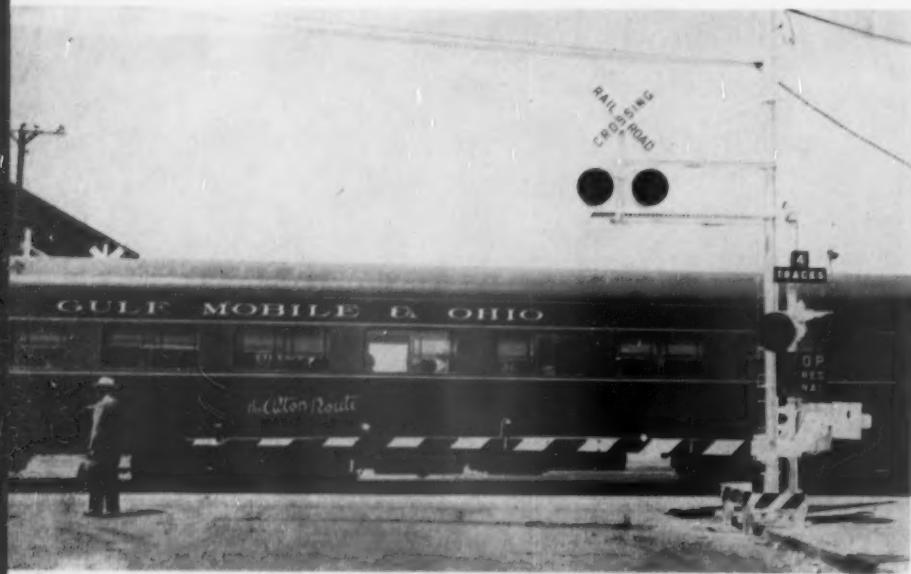
Paint materials Canadian Pittsburgh Industries, Murphy Paint Div., Montreal

Sherwin-Williams Co. of Canada, Montreal

Washbasins, dental bowls and hoppers Robert Mitchell Co., Montreal

Plastic decorative panels:

- Arborite Arborite Co., Montreal
- Panelite St. Regis Paper Co. (Canada), Montreal



BEFORE INSTALLATION of gates, 26 persons were killed in 10 years at crossings at Lincoln, Ill. No deaths occurred in the ten years following installations.



R. B. THOMAS

Chief Engineer
Illinois Commerce Commission

Grade Crossing Deaths Cut 97.4%

Deaths and injuries resulting from railroad grade crossing accidents can be reduced, declared R. B. Thomas, chief engineer of the Illinois Commerce Commission, at a recent meeting in Chicago of the Western Signal Engineers Committee. Experience in four Illinois communities over a 10-year period, he said, showed a 97.4 per cent decline in grade-crossing fatalities.

Illinois has about 18,000 railroad-highway grade crossings, on which records of accidents since January 1, 1928, are available. The most effective arrangement of the barrier type protection, said Mr. Thomas, is the modern flashing-light signals combined with the short-arm gate. This form of protection was developed in Illinois, he said, the first installation having been made experimentally at the Wood Street crossing with the two main tracks of the Grand Trunk Western at Harvey, Ill., in 1936.

An operating period of 25 seconds prior to the time the train reaches the crossing is desirable for flashing light signals combined with gates, according to Mr. Thomas. This allows, with some slight variations, a 5-second prewarning, 8 seconds for lowering the gates, and 12 seconds for gates in horizontal position. An operating period of 20 seconds in advance of the train reaching the crossing reasonably meets the requirements for flashing-light signal installations, he said.

A practice of long standing, to provide protective facilities at a crossing where an accident has recently occurred, does not satisfactorily solve the problem of safety. The speaker explained a plan he inaugurated in 1935 for a more comprehensive approach to that problem than had heretofore been undertaken, at least in Illinois. The ultimate objective was protection for all

highway traffic across railroads located in a given area.

A project can be developed for a given area only after an intensive investigation has been completed covering all essential factors that must be given special attention, said Mr. Thomas. These factors include the location of schools, hospitals, churches, the fire department, business sections and residential districts; and a study of vehicular traffic, train movements and street layout.

No strict rule can be followed to calculate the number of crossings that should be closed in any given area, the speaker declared, advocating the exercise of reasonable judgment as the best guide. Separating the crossings into three groups serves as an excellent initial approach, he explained. Group 1 is comprised of crossings on principal business streets, state highways and the like which cannot be considered for closing. Group 2 consists of crossings that can be readily closed. Group 3 serves as a temporary repository for the "in-between" crossings; as each is fully considered it is shifted either to Group 1 or Group 2. "A surprisingly large number of crossings can often be abolished when a concentrated effort to that end is undertaken," Mr. Thomas declared. Under his plan closing of crossings does not reduce the volume of vehicular traffic passing over a railroad in a given area, but traffic is routed over fewer crossings "with a much greater degree of safety" because the crossings remaining open are provided with modern protective facilities.

"It is necessary in the final analysis," Mr. Thomas went on to say, to provide the "minimum number of crossings that will afford reasonable means for vehicular traffic to pass from one side of the railroad to the other without undue inconvenience.

"There is a material financial advantage to the municipalities where such a plan is adopted. The railroad, supplemented with aid from state and federal agencies, will often proceed with the installation of the protective facilities without contribution from the municipality. The railroads also receive benefits as a result of closing and protecting crossings. A reduction in crossing accidents affords a substantial saving to the railroads in claim and litigation expense. Damage to railroad equipment decreases, another source of saving. Further, the railroads are relieved from the cost of maintenance and rehabilitation of crossings closed."

"The plan of closing and protecting crossings has been applied to more than 250 localities in Illinois. Its main purpose is to reduce the number of persons killed and injured in vehicular accidents. The effectiveness of this plan is demonstrated by the decrease of accidents in the localities where it is in effect. The table shows the reductions in the number of persons killed and injured in the 10-year periods before and after gates were installed at crossings in Moline, Rock Island, Gibson City and Lincoln. This decrease was registered despite an increase in the Illinois automobile registration from 1,459,195 in 1936, to 1,904,991 in 1948, and to 2,457,000 in 1952."

Where the local conditions preclude closing crossings and all crossings receive protection, a similar result obtains, said Mr. Thomas. The main line of the Grand Trunk Western from the Indiana-Illinois state line into Chicago was used by the speaker as an example. A group of 23 grade crossings on this railroad received protection by modern automatic flashing light signals combined with short arm gates during the period 1936 to 1945. The sum total of crossing-years amounted to 297 for the group between January 1, 1928, and the time the protection was progressively completed. The sum total of crossing-years for the group since protection amounts to 255 as of January 1, 1952. Here is the accident record at those 23 crossings before and after installation of signals and gate, as given by Mr. Thomas:

297 Crossing-Years Before		255 Crossing-Years After	
killed	Injured	killed	Injured
72	95	5	2

RECORD OF THREE ILLINOIS CROSSING PROTECTION PROJECTS

Locality	Railroads	Crossings			No. Killed and Injured in Accidents During 10 Yr. Periods Before and After		
		Protected	Closed	Date	Before	After	
Moline	CRI&P	37	11	1941	34	45	2
Rock Island	CB&Q DRI&NW						14
Gibson City	IC NYC&SL Wabash	18	10	1941	17	15	0
Lincoln	GM&O (Alton)	7	5	1939	26	24	0
Totals		62	26		77	84	17
	REDUCTION IN NUMBER OF DEATHS	"	"	"	97.4%		
		"	"	"	79.8%		

Benchmarks and Yardsticks

QUITE A FEW RAILROAD MEN and railroad suppliers are seriously disturbed at the canceling by the A.A.R. of some of its divisional meetings this year. Among those who are most disappointed at this action is your reporter and, he suspects, the people who had to do the calling off.

The value of the annual meetings of railway men in the industry's various specialized branches is not a matter for debate—since nobody could be found who would defend the negative. There is no industry which enjoys a more general mutual acquaintance than the railroads do among the people who perform similar duties for different companies. And the easy interchange which results from this close acquaintance is one of the surest means there is of keeping the industry as a whole up-to-date on outstanding performance, wherever it occurs.

At the same time, your reporter knows enough about budget-making to have pretty lively sympathy for the fellow whose job it is to trim a budget down. Unless a critic can actually sit in the budget-maker's chair and see what funds he has available and the choices open to him in making necessary savings, he is quite incapable of passing fair judgment on the budget-maker's decisions as to this or that item which has had to be reduced. The critic may regret the budget-maker's decisions ever so much, but he cannot reach the conclusion that the budget-maker has erred, unless he has the complete information that only the budget-maker possesses.

It is, of course, entirely possible for a budget-maker to make mistakes — to cut off something which is, actually, more important than he thinks it is. The only possible way that the budget-maker can have his perspective corrected is to be fully informed as to the relative importance of the various activities under his jurisdiction. He can be provided with this information only if the people directly affected by these activities will let him know what importance they attach to them. For example:

"Dear Mr. X: At the——convention last year I talked to Mr. A. and Mr. B. who told me of their success with the——process, as a result of which we installed this process on our railroad and are effecting an annual saving of \$——."

If Mr. X had a great deal of such evidence in his files, he could hardly fail to see the importance of the convention in question in its true perspective, and would be governed accordingly. Having such information would be helpful—just as a congressman likes to get expressions of opinion from his constituents. But it is too much for a constituent to expect a legislator to vote blindly as he directs—since the constituent lacks full knowledge of the many other factors to which the legislator also must give weight.

J.G.L.

Fifty-third annual convention emphasizes theme that new traffic patterns and technological advances require different approach to engineering activities



G. W. Miller
President-Elect



G. M. O'Rourke
Vice-President

KEYNOTE AT A.R.E.A. MEETING...

Engineers Face Changing Times

The extent and manner in which changing times have altered the role and function of railway engineering officers was made clear during the fifty-third annual convention of the American Railway Engineering Association last week at the Palmer House, Chicago. As implied directly in two of the major addresses, and less directly in the substance of many committee reports and technical talks, the engineer, rather than being merely a builder of new lines and other facilities to handle a growing volume of traffic and to penetrate new territories, must now concentrate his attention on adapting the railroad fixed plant to changing patterns of traffic, while at the same time constantly exploring new ways of reducing the cost of maintaining this plant.

One of the addresses to make this point was that of J. M. Symes, executive vice-president of the Pennsylvania, who spoke at the annual luncheon on Wednesday, March 17, on the subject, "The Future of Railroading—A Challenge to Engineers."

The era of railroad construction into new areas is behind us, Mr. Symes said, and the more serious challenge facing the railroads today is the "problem of taking what has already been built and changing its pattern to meet present-day conditions."

Mr. Symes cited the example of a long Pennsylvania branch line built many years ago to take care of substantial passenger and freight business. On this branch, which is nearly 300 miles in length—most of it single track—a combination of factors has brought about a substantial reduction in both passenger and freight traffic.

"In the old days, with a rather heavy density of short passenger and freight trains, it required many facilities to operate this line, but certainly they are not needed with today's lower volume of business when we are

operating longer passenger and freight trains," declared Mr. Symes. A few diesel locomotives on this branch have now done away with engine terminals, coal docks and water stations. Also, stations are now much farther apart, passing sidings are being abandoned, intermediate terminals have "dried up," and mechanization is taking the place of manual labor. "Even with the lighter volume of traffic, by shrinking facilities to meet present-day conditions, this branch can be operated at a slight profit on its own feet," he said. "When you take into account the traffic feeder value to the main line, it is extremely helpful to our system. That is the kind of treatment that must be given these branch and side lines where there have been such huge losses in traffic volume."

Speaking to his listeners "as engineers and also as practical business men," Mr. Symes asked them how they were going to "shrink that plant—and reduce costs of operating and maintaining it so that it can continue as a useful and profitable transportation route?"

"So," he said, "we find ourselves confronted with the necessity of shrinking excess capacity brought about by loss of traffic to competition and improvements in the art of producing transportation. There is nothing more harmful to any industry than unused plant capacity. Each stretch of rail line should be carefully analyzed to determine its present and future requirement. Against these requirements should be placed vision to determine the kind of railroad you would build today to take care of these anticipated requirements—in the light of technological improvements that are available. . . . We will then eventually have better railroads capable of providing better service and operating at lower costs than ever before."

Somewhat the same line of thought was developed in an address by Richard G. May, vice-president, Opera-



W. G. Hedley
Vice-President-Elect



N. D. Howard
Secretary



C. G. Grove
President

tions and Maintenance Department, Association of American Railroads, on "Railroad Progress Through Engineering." Mr. May devoted the first part of his address to an analysis of the factors, including subsidized competition and regulation, that have resulted in "serious inroads" on the traffic position of the railroads. For this reason, he said, whereas emphasis was formerly on building and expansion, the railroad engineer today "must be familiar with the records and accounts pertaining to the operating and maintenance costs of his department, with accounting and budgeting procedures, with cost-control methods and many other items generally thought of as being out of the engineering field and in that of business administration. You might say that today's engineer has become a cost engineer in addition to being a construction and maintenance engineer."

"These days," said Mr. May, "it is of paramount importance that we apply to this business of railroading the same principles as the management of a mill, mine, factory or market would apply to those businesses. The engineer must thus know not only the overall picture of company spending but also the unit cost of maintenance and construction items so that he can develop means of controlling expenses. He must know such individual costs before he can assemble data to support recommendations for new methods and equipment. In other words, given an operation requiring correction, he must be able to break down each step, question each step, develop a new method or facility and install the machinery needed to insure satisfactory performance."

Another address dealt with the possible effect of nuclear power on the railroads. The speaker on this subject was John R. Menke, president, Nuclear Development Associates, Inc. Mr. Menke sees "two large effects of this new energy source on the railroads. These are: (1) The effect on freight revenues; and (2) the effect on railroad power generation."

"Should our entire power complex operate on uranium," Mr. Menke stated, "the railroads would face the loss of perhaps 80 per cent of their bituminous coal freight revenue." He hastened to add, however, that he doesn't expect this substitution of uranium for coal to occur overnight. Projecting the future construction of

new power plants, and assuming that the electric utility industry will continue its growth at the same rate as its average over the last 30 years, i.e. doubling every 10 years, Mr. Menke estimated that electric generating capacity of the United States would be 50 per cent "nuclearized" by the year 2000. Even under these conditions, he said, the 50 per cent remaining as coal-consuming capacity will be many times the present installed capacity and would still generate substantial railroad revenue.

Mr. Menke then turned to a discussion of the second effect of nuclear power on the railroads—the generation of power for their own use. "For this application," he said, "nuclear power may take the form of either large stationary plants providing power for electrified lines or of small units powering locomotives. There is no doubt that either of these possibilities is technically feasible. There is, however, doubt about the economic justification of either of them for many years to come."

That the problems propounded by Mr. May and Mr. Symes are not going unnoticed by railroad engineering officers was evident time and again in the reports of the association's 23 standing and special committees, and in the many technical addresses presented in connection with these committee reports. Before the association got down to the business of listening to these reports and addresses, an accounting of its activities during the year was heard from President C. G. Grove, chief engineer, Western Region, Pennsylvania. These activities, he said, have included completion of the project for revising and reprinting the Manual, the publication of a consolidated annual index of the proceedings of the association extending back to 1940, and the creation of the honorary degree of member emeritus for committee members of outstanding service.

Reference was made by President Grove to a seminar held recently at the University of Michigan on the subject "Railroad Management — the Next Generation." Among the things brought out at the seminar, he said, was the fact that the salaries offered to technical graduates by the railroads are less than the salaries offered by other industries. "This is true in some cases and is an item that the various railroads should carefully analyze and correct if possible." Another question raised, accord-



BOARD OF DIRECTION of the American Railway Engineering Association in session at Chicago on March 16. Seated around table, reading clockwise: Ray McBrien, engineer standards and research, Denver & Rio Grande Western; Norris V. Engman, assistant to secretary; Nancy Campbell, stenographer; E. G. Gehrke, assistant secretary; N. D. Howard, secretary; C. G. Grove (president), chief engineer, Western Region, Pennsylvania; G. W. Miller (vice-president), engineer maintenance of way, Eastern Region, Canadian Pacific; G. M. O'Rourke (vice-president), assistant engineer maintenance of way, Illinois Central; T. A. Blair (past president), chief engineer, Santa Fe system; W. C. Perkins, chief engineer, Union Pacific;

ing to Mr. Grove, was whether the railroads might not use to greater advantage graduates of the school of business administration. "It was conceded," he said, "that they need some business administration graduates, but relatively few when compared with their requirements of graduates in engineering."

In his annual report, N. D. Howard, secretary, reported that membership in the association as of February 1 stood at 3,257, a net gain of 20 over the previous year, "continuing the unbroken membership increase each year since 1944." On the other hand, because of a combination of factors, the total number of junior members on the membership rolls as of February 1 was 220, compared with 261 on the same date of 1953.

Mr. Howard referred to the report of the treasurer (A. B. Hillman, chief engineer, Belt Railway of Chicago), which showed that for the year as a whole there was an excess of disbursements over receipts of \$9,034.79. "That this deficit was not greater," he said, "is significant in view of the extra non-recurring expenditure in 1953 of \$20,572.58 for the work involved in the complete reprinting of the Manual."

A highlight report on developments in railroad research during the past year was made in an address by G. M. Magee, director of engineering research, Engineering Division, A.A.R. Mr. Magee reported that a second building for conducting mechanical research has been completed at the association's research center in Chicago, and outlined a proposal for constructing a third building.

Referring to the death on February 21 of W. C. Barnes, engineer of tests, Mr. Magee reviewed the development of equipment for detecting internal defects in rails. Mr. Barnes' foresight and that of the A.R.E.A. Rail committee in sponsoring early research on the subject "are well exemplified by the tremendous benefits that are

E. S. Birkenwald, engineer of bridges, Western Lines, Southern system; C. G. Geyer (past president), vice-president, construction and maintenance, Chesapeake & Ohio.

Left to right (standing): G. E. Robinson, engineer of structures, Lines West of Buffalo, New York Central system; A. N. Laird, chief engineer, Grand Trunk Western; M. H. Dick, western editor, *Railway Age*; E. E. Mayo, chief engineer, Southern Pacific; L. L. Adams, chief engineer, Louisville & Nashville; H. B. Christianson, special engineer, Chicago, Milwaukee, St. Paul & Pacific; B. R. Meyers, chief engineer, Chicago & North Western; and R. J. Gammie, chief engineer, Texas & Pacific.

being realized from rail detector cars. In 1952, as reported by the Rail committee this year, there were over 30,000 transverse defects located in track by detector cars, permitting rail removal before service failure occurred."

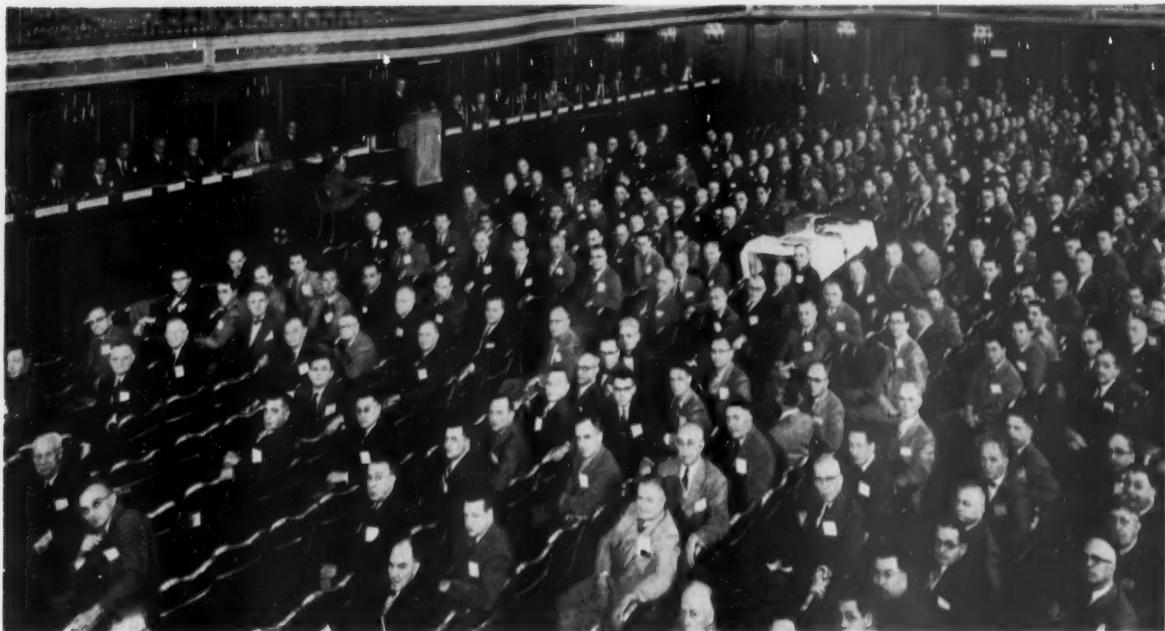
All sessions of the convention were presided over by President Grove, assisted by Secretary Howard and Vice-President G. W. Miller, engineer maintenance of way, Eastern Region, Canadian Pacific. The attendance at the convention included 1,160 members and 907 guests, a total of 2,067.

Election of Officers

The following officers were elected: President, Mr. Miller, and vice-president to serve for two years, W. G. Hedley, assistant chief engineer, Wabash, St. Louis.

The directors elected are C. B. Porter, assistant chief engineer, C & O Richmond, Va.; C. H. Sandberg, assistant bridge engineer—system Atchison, Topeka & Santa Fe, Chicago; W. H. Giles, assistant chief engineer—system—construction, Missouri Pacific, St. Louis; and H. R. Peterson, chief engineer, Northern Pacific, St. Paul, Minn. Members of the nominating committee are T. M. Von Sprecken, assistant to chief engineer, Southern, Washington, D. C.; F. A. Hess, assistant chief engineer, Lines West of Buffalo, New York Central, Chicago; R. H. Beeder, assistant chief engineer system, Atchison, Topeka & Santa Fe, Chicago; C. J. Code, engineer of tests, Pennsylvania, Philadelphia; and G. L. P. Plow, assistant chief engineer, Canadian National, Montreal.

In addition, G. M. O'Rourke, assistant engineer maintenance of way, Illinois Central, Chicago, was automatically advanced to senior vice-president succeeding Mr. Miller.



OPENING SESSION of the meeting was interrupted momentarily while this picture was taken. During three-day meeting reports and addresses were presented in rapid order.

A PANORAMIC LOOK AT

The A.R.E.A. Technical Sessions

A brief summary, by subject matter, of the more significant features of the committee reports and addresses presented at last week's meeting

The answers to these and many other questions—the solution of which means dollars in the till of the railroads, as well as safe, dependable operation—were revealed during the three-day convention of the American Railway Engineering Association.

When the fifty-third annual meeting of the A.R.E.A. adjourned shortly after noon on March 18, 129 reports had been presented on 113 of the 188 assignments, and 17 speakers had addressed the convention on matters pertaining to track, bridges, buildings, water service, sanitation and engineering accounting. Twenty of these reports dealt with new material or revisions proposed for the Manual.

In advance of the meeting all members were given, through the association's bulletins, a preview of the contents of all the reports submitted by the 22 standing committees and the one special committee. The bulletins, numbered from 509 to 514 inclusive, contained a total of 908 pages in addition to numerous tables and drawings shown on insert sheets.

Roadbed Stabilization

For a number of years the Roadway and Ballast committee has been endeavoring to find out why

- What economies, if any, does dieselization effect in the labor requirements for the maintenance of way and structures?
- What effect does dieselization have on the design of yards and terminals?
- What constitutes a good arrangement of receiving and departure yards in relation to a hump classification yard?
- How does a railroad cut \$1.00 from the cost of renewing a crosstie?

some railroad subgrades fail under traffic, requiring excessive maintenance, and why some soils are subject to sliding, so measures can be taken to correct them.

One of the methods used to check the theory of soil mechanics with actual performance is by installing electrical apparatus involving pressure cells within the subgrade. This year the committee submitted a report on an installation of pressure cells made in 1950 in a water-carrying ballast pocket on the New York Central.

An analysis of the data indicated that the impact



C. H. Wiggins, assistant division engineer, W. E. Bedinger, division engineer, both SAL; W. A. Spell, engineer maintenance of way, Atlantic Coast Line.



A. S. Krefting, assistant chief engineer, Soo Line; and S. P. Berg, who is chief engineer of the Duluth, South Shore & Atlantic.

effects of dynamic locomotive runs increase the recorded static soil pressure by approximately 50 per cent for diesel locomotives and approximately 80 per cent for steam locomotives. However, the effects of impact and vibration are reduced at quite a rapid rate as the distance from the source becomes greater, and their effect is almost completely dissipated before reaching points eight feet from the center line of the track.

Another method of checking the theory of soil mechanics is by observing the stratified soils in railroad cuts and then evaluating their performance. An excellent opportunity was afforded for the study of the Pleistocene sediments exposed when the Rock Island built its Atlantic short-cut in southwestern Iowa. Particular attention was given to a cut designated No. 31 where an earth slide is developing, the critical point being a seam of Aftonian clay over Nebraskan till.

Dr. R. B. Peck, research professor of soil mechanics, University of Illinois, stated in a report and an address that there is a trend in recent years toward replacement of trestles or bridges over valleys with fills and either short bridge spans or culverts. In several instances, he said, the attempt has not been successful because of the inability of the underlying subsoil to withstand the weight of the new fill.

It is believed that failures of this type cannot be considered predictable on the basis of deep borings and soil tests; however, a rough calculation to determine the height of the fill at which failure of the subsoil might be expected can be made on the basis of a formula developed for determining the bearing capacity of a smooth footing on a clay subsoil. This formula indicates that "the maximum load approximately equals 2.57 times the unconfined compressive strength." Even where more refined calculations can be made, Dr. Peck does not think them warranted.

What About Weed Control?

During the past season the Roadway and Ballast committee observed weed spraying on some 700 miles of track and brush spraying on about 200 miles. In

addition, many more miles have been checked after application. From these observations it appears that early spring application of the so-called soil-sterilant type of weed killers gave better and more dependable results than later applications. This was especially noticeable where this procedure had been followed for two or more years.

Two New Chemicals. It was reported that two new chemicals have shown promise in some railroad tests, and further study is advocated. These are Dalapon, a product of the Dow Chemical Company, and Du Pont Weed Killer D. The first is a liquid grass killer and the second is a wettable powder similar to CMU.

Asphalt Ballast Installation. The one-half mile of asphalt-penetrated ballast with a seal coat installed on the Illinois Central near Manteno, Ill., has now been in service 10 years. The Roadway and Ballast committee states that this test section indicates that such treatment is practical and beneficial. Figures for nine years show an average annual maintenance saving of 207 man-hours of labor. At present rates this saving is more than sufficient to pay the initial construction costs, including materials.

During its service the asphalt ballast section drained well and kept out dust and cinders. Consequently there was less "pumping" than on conventional track—an item reflected by maintenance costs. The greatest saving—and one to which no thought had been given at the start of the test—is on ties. The seal coat of asphalt and screenings has proved extremely beneficial in sealing checks and splits.

Attack on Tie Costs

The Ties committee presented tie statistics for 1952 as compiled annually by the Bureau of Railway Economics. This statement showed that the average cost of ties increased in all regions, ranging from 8 cents in the Southwestern region to 67 cents in the New England region, the average increase in 1952 over 1951 in the United States being about 30 cents each.

From a survey by the Committee on Economics



R. L. Fox, division engineer, Southern; W. H. Huffman, assistant engineer of maintenance for the Chicago & North Western.

of Railway Labor on the methods, equipment and organization used to replace ties, it was found that failed ties are inspected at least twice before removal, once by the section foreman and then by either the roadmaster or track supervisor, and in many cases, a third time by other officers. On five roads where specially organized and equipped tie gangs are used, savings of 22 to 47 per cent are reported, as compared with renewing ties by section laborers with hand tools. This is attributed to the use of mechanical equipment and also to the fact that gangs which perform tie renewals every day become more skilled and adept than those used only periodically for that purpose.

Cost Cut \$1.00 on Santa Fe. The Railway Labor committee inspected a special tie-renewal gang of 40 men organized on the Santa Fe to find a more economical method of making routine maintenance renewals without a track raise as ordinarily handled by section forces.* Equipped with a spike puller, a rail lifter, a tie remover, a tie-bed scarifier, a tie inserter, and two spike hammer machines, this gang renewed ties at the rate of 0.742 man-hours per tie, which compares with 1.211 man-hours when done by section forces. Including the wages of the laborers, machine operators, timekeeper, foreman, machine depreciation, fuel and oil, the cost was \$1.40 per tie as compared with \$2.40 when done by section forces.

Railroading in the Past. Supplementing the report of the Railway Labor committee was an address by J. S. McBride, retired chief engineer, C&EI, in which he related how railroads were constructed and maintained when he first started railroading. The strides made in materials, practices and labor-saving equipment since those early days were sharply pointed up by his address.

Substitute Ties. The necessity for finding a good substitute crosstie is less urgent now than at any time during the past 40 years because of the improvement made in preserving processes and recent developments in methods for reducing mechanical wear, said the Tie committee. Even if the high

*See "Mechanized Tie-Renewal Gang" in the August 24, 1953, *Railway Age*.



From the Central of Georgia—R. H. Gilkey, division engineer, Savannah; and G. W. Benson, superintendent of bridges, Macon.

price of timber continues, it added, no ties of substitute material have been found that can compete with fully pressure-treated wood ties, either in first cost or annual depreciation.

Progress in Track

The Committee on Track is continuing its investigation of test installations of tie plates on the Cincinnati, New Orleans & Texas Pacific near Chattanooga, Tenn., to develop information on plate cutting and bending. From biennial measurements made in June 1953, the committee found that the tie abrasion values were too small to develop the effect of various design features, such as the length and thickness of the tie plates. Also, there was no indication of permanent bending in the plates and apparently, it said, there has been insufficient dishing out of the ties under the rail base and loss in section of the plates by corrosion to cause even the thinnest plate to become permanently bent.

In an address supplementing the report, S. K. Coburn, chemical engineer, Engineering Division, A.A.R., described the study he is making toward a solution of the corrosion problem created by brine drippings on track and structures. Using chemicals and small metal specimens under controlled experimental conditions, he has devised a method for reproducing corrosion in a minimum of time so data may be developed for effective inhibition.

Hold-Down Fastenings. The Track committee began tests in 1947 to determine the effectiveness and economy of several types of hold-down fastenings, tie pads, etc., for increasing the service life of ties by minimizing plate cutting and reducing the frequency of regaging and readzing curves. It reported that new sections were added to this test track, near East Bernstadt, Ky., on the L&N. One section, a rail-length long, included a coating or "smear," designated Ankor Seel, made by the Ruberoid Company, which is a fibered coal tar product that was paddled on the adzed tie surfaces.

Another new test section, covering 10 creosoted oak ties, included tie plates placed in connection



D. C. Hastings, division engineer; J. R. Talbott, Jr., track supervisor; J. C. DeJarnette, Jr., chief engineer — all RF&P. Right, Major G. P. Hayes, Transportation Corps.



Two delegates representing the Illinois Central—E. A. Johnson, assistant engineer of bridges; and M. Block, engineer of bridges.

with relaying the rail at which time the plates were spotted by a Dun-Rite gaging machine. This test includes plates having two cut line spikes and two Nordberg creosoted hardwood maple pegs in the anchor-spike positions.

A third new test section, containing 24 creosoted oak ties, was installed for investigating a relatively new product designated Protek-Tie. This is a cut-back asphalt with asbestos fiber and rust inhibitors, manufactured by the Nox-Rust Corporation, which was paddled on each adzed surface.

While the committee remarked that no final conclusions can yet be made from the six-year test of the remainder of this test track, it did note that

several of the special fastenings have demonstrated their efficiency for reducing tie wear to amounts well under that of cut-spike construction. Another important advantage it noted was that special anchor spikes are superior to cut spikes in holding gage on curves. The tie coatings have continued to be effective in retaining a higher moisture content in the tops of the ties, which in turn maintains a more uniform distribution of the moisture content throughout the depth of the ties.

Tie Pads. From an inspection of this same test track, the Track committee concluded that, although the tie pads with few exceptions were in good condition and performing satisfactorily, the economy

A.R.E.A. COMMITTEE CHAIRMEN

Following is a list of the 22 A.R.E.A. standing committees, and its one special committee, giving the chairman and vice-chairman in charge of each committee's work during the past year. Directly following the close of the convention, seven of the chairmen (each indicated by an asterisk), having served the regular three-year period, relinquished their duties, the chairmanship in all cases being assumed by the vice-chairman. The list follows:

Roadway and Ballast—B. H. Crosland (chairman), assistant chief engineer, St. Louis-San Francisco, Springfield, Mo.; J. A. Noble (vice-chairman), chief engineer, Western Lines, Atchison, Topeka & Santa Fe, Amarillo, Tex.

Ties—P. D. Brentlinger (chairman), forester, Pennsylvania, Philadelphia; L. C. Collister (vice-chairman), superintendent treating plant, Atchison, Topeka & Santa Fe, Albuquerque, N.M.

Rail—C. J. Code (chairman), assistant chief engineer—engineer of tests, Pennsylvania, Philadelphia; B. R. Meyers (vice-chairman), chief engineer, Chicago & North Western, Chicago.

Track—L. L. Adams (chairman), chief engineer, Louisville & Nashville, Louisville, Ky.; W. E. Cornell (vice-chairman), engineer of track, New York, Chicago & St. Louis, Cleveland.

Buildings—J. B. Schaub* (chairman), assistant

engineer bridges, Illinois Central, Chicago; O. W. Stephens (vice-chairman), assistant to chief engineer, Delaware & Hudson, Albany, N.Y.

Wood Bridges and Trestles—C. H. Newlin* (chairman), bridge and building supervisor, Southern, Bristol, Va.; W. C. Howe (vice-chairman), engineer bridges and buildings, Bessemer & Lake Erie, Greenville, Pa.

Masonry—W. R. Wilson (chairman), assistant engineer, bridge department, Atchison, Topeka & Santa Fe, Chicago; M. S. Norris (vice-chairman), regional engineer, Baltimore & Ohio, Pittsburgh, Pa.

Highways—W. C. Pinschmidt (chairman), engineering assistant to vice-president construction and maintenance, Chesapeake & Ohio, Richmond, Va.; C. I. Hartsell (vice-chairman), division engineer, Chesapeake & Ohio, Saginaw, Mich.

Records and Accounts—H. N. Halper (chairman), valuation engineer, Erie, Cleveland; L. W. Howard (vice-chairman), valuation engineer, Illinois Central, Chicago.

Water, Oil and Sanitation Services—G. E. Martin* (chairman), superintendent water service, Illinois Central, Chicago; H. L. McMullin (vice-chairman), engineer water supply, Texas & Pacific, Dallas.

Yards and Terminals—J. N. Todd (chairman), superintendent scales and work equipment, Southern, Washington, D.C.; F. A. Hess (vice-chairman), assist-

of tie pads in extending tie life for a given added cost can not be determined with any great degree of accuracy until the service life of the pads has been established and the protection appraised.

Looking at tie pads from the view of labor economy, the Economics of Railway Labor committee reported that, although it had been able to obtain only a small amount of information on the specific savings to be derived through the use of tie pads, it is evident, from the number and character of the installations being made, that many railroads regard them as offering possibilities for savings.

Rail Performance

The Rail committee's statistical report on rail failures indicates that mill performance has been good. Two transverse fissures originating from shatter cracks in control-cooled rail were reported; these were attributed to the fact that the rails were cooled in containers having improper lids, a condition now corrected.

Nine transverse fissures from hot torn steel were reported found in control-cooled rails but, since these came from three mills which reheat their rail-steel blooms, it is believed that these rails came from blooms accidentally heated too hot for rolling into sound rails.

Web failures within joint-bar limits, compound fissures and detail fractures continue to be the most prevalent types of failures occurring in control-cooled rail. The committee states that the large number of web failures found within joint-bar limits seem to be due to local conditions on various rail-

roads and the increased use of supersonic devices for detecting bolt-hole and fillet cracks.

What Causes Rail Shelling? That's what five task groups are still trying to find out. A subcommittee group is watching the performance of some experimental heat-treated rails laid on curves to see if that might give an answer, but so far no definite clue for the prevention of shelly spots and head checks has been disclosed.

Another group, under R. E. Cramer, research associate professor, University of Illinois, is making rolling-load tests on stress-relieved rail specimens, flame-hardened rails, high silicon rails, and electric-furnace steel rails. He reported that shelling in service appears to be due to wheel loads too heavy for the small area of contact between wheel and rail. As a result of the flow of steel, internal stresses are produced which the steel cannot withstand. He further stated that laboratory rolling-load tests indicate that stronger rail steel, such as higher silicon-steel rails, intermediate manganese chrome-vanadium alloy rails, or heat-treated rails, should give longer life before shelling develops in service.

Another task force at Battelle Memorial Institute undertook to explore some factors that might influence the formation of shelly failures. This group used mild steel and silver chloride, which possess properties similar to rail steel, for their tests. Evidence from rolling-load tests on these materials suggests that plastic deformation is the major culprit in shelly failures. Apparently rail life could be improved by design changes and by metallurgical changes which would limit plastic deformation. It was suggested that the use of lower wheel loads,

ant chief engineer, the New York Central, Chicago.

Iron and Steel Structures—J. F. Marsh (chairman), engineer bridges, Chicago, Rock Island & Pacific, Chicago; A. R. Harris (vice-chairman), engineer of bridges, Chicago & North Western, Chicago.

Economics of Railway Location and Operation—J. W. Barriger* (chairman), vice-president, Chicago, Rock Island & Pacific, Chicago; H. B. Christianson, Jr. (vice-chairman), assistant engineer, Atchison, Topeka & Santa Fe, Chicago.

Wood Preservation—W. F. Dunn, Sr.* (chairman, deceased), tie and timber agent, Southern, Washington, D.C.; A. J. Loom (vice-chairman), general superintendent timber preservation, Northern Pacific, Brainerd, Minn.

Contract Forms—G. W. Patterson (chairman), assistant chief engineer, Central Region, Pennsylvania, Pittsburgh; W. D. Kirkpatrick (vice chairman), assistant to chief engineer system, Missouri Pacific, St. Louis.

Economics of Railway Labor—R. J. Gammie (chairman), chief engineer, Texas & Pacific, Dallas; D. E. Rudisill (vice-chairman), chief engineer maintenance of way, Western Region, Pennsylvania, Chicago.

Cooperative Relations with Universities—C. G. Grove* (chairman), chief engineer, Western Region, Pennsylvania, Chicago; R. J. Stone (vice-

chairman), vice-president operations, St. Louis-San Francisco, St. Louis.

Waterways and Harbors—Arthur Anderson (chairman), special assistant engineer, New York Central, Chicago; A. L. Sams (vice-chairman), office engineer, Illinois Central, Chicago.

Maintenance-of-Way Work Equipment—N. W. Hutchison (chairman), engineer work equipment, Chesapeake & Ohio, Barboursville, W. Va.; A. W. Munt (vice-chairman), supervisor work equipment, Canadian Pacific, Toronto.

Clearances—A. M. Weston (chairman), senior assistant engineer, Baltimore & Ohio, Baltimore; E. R. Word (vice-chairman), assistant engineer, Illinois Central, Chicago.

Waterproofing—T. M. von Sprecken (chairman), assistant to chief engineer, Southern, Washington, D. C.; Henry Seitz (vice-chairman), designing engineer of bridges and buildings, Baltimore & Ohio, Baltimore.

Impact and Bridge Stresses—E. S. Birkenwald (chairman), engineer bridges, Southern, Cincinnati; M. J. Plumb (vice-chairman), assistant engineer, New York Central, Chicago.

Special Committee on Continuous Welded Rail—H. B. Christianson* (chairman), special engineer, Chicago, Milwaukee, St. Paul & Pacific, Chicago; L. F. Racine (vice-chairman), chief engineer, Chicago, Indianapolis & Louisville, Lafayette, Ind.



Charles Rager, Fairmont Railway Motors, Inc.; J. R. Graham, Nordberg Manufacturing Company; L. R. Lamport, chief engineer maintenance, C&NW.



G. W. Neal, superintendent, Chattahoochee Valley; and A. B. Chaney, assistant chief engineer, maintenance, Missouri Pacific.

larger wheels, and higher-strength material should prove to be quite effective in this direction.

Another task force under M. M. Frocht, research professor of mechanics, and director of experimental stress analysis, Illinois Institute of Technology, attacked the problem through a three-dimensional photoelastic investigation, using models of Fosterite and Bakelite.

The complete state of stress due to wheel contact pressure along five significant lines was studied in Fosterite models of the head of a railroad rail subjected to vertical loads and horizontal thrust. In this study the actual principal stresses were determined by a new method which combines frozen stresses with an extension of the shear-difference method to three-dimensions. This is described as the first application of this new technique to a major practical problem.

Is More Welded Rail Being Laid? The Special Committee on Continuous Welded Rail reported that about 43 miles of track was laid with welded rail in 1952, making a total mileage of more than 290 miles laid from 1933 to 1952 inclusive. This committee also reported that the Matisa Equipment Corporation furnished some specimens of 131-lb. and 132-lb. electric flash butt-welded rails to the University of Illinois laboratory for testing. While all the tests on these specimens indicated that they were satisfactory, the committee wanted more test specimens before drawing final conclusions on the electric flash welds.

Reports from 23 roads which have continuous welded rails in their tracks indicate that secondary batter has not been a problem. The great majority of these roads reported that, disregarding those located on soft track, the welds have been entirely maintenance free. It is interesting to note the report of two roads that during the past year they had ballasted tangent track, on which welded rail was laid, at a time when the temperatures were at least 20 deg. above that which prevailed when the rail was laid, with no unusual difficulties.

Can Joint Bar Failures Be Cut? Because there has been a wide variation in test results conducted on joint bars, the Rail committee does not want to

draw any definite conclusions, but it did make some general observations. Mechanical properties of service-failed bars indicate the material in a high percentage of the bars does not come up to specification requirements, primarily showing a yield point below 70,000 p.s.i. The material quality and proper heat treatment apparently are of prime importance for the reduction of joint bar failures, it said.

Modernizing a Freighthouse

A report of the Buildings committee dealt with this subject. It tells how to improve the floors, what types of doors to use and their operation, and gives tips on the lighting, communications, service shop, locker and lunchroom facilities, cooper shop, platform offices, scales, monorails, and fire protection which may be incorporated in the improvements.

New Building Materials. The Committee on Buildings also presented a report on the new materials available for buildings. These include plastic wallpaper, corrugated translucent plastic panels, reclaimed rubber for walks and driveways, decorative wood veneers on plywood, louvre windows, non-skid rubber floor paint, lightweight concrete, and a fire detector.

Can Laminated Timber Be Treated? It can, says the Wood Preservation committee, if the material is treated before lamination and if proper timing is observed between preparing the final surfaces for gluing and the gluing operation. This timing should not be more than 24 hours before gluing where water-borne preservatives are used and not more than 8 hours where oil-borne preservatives are used. Phenol-resorcinol adhesives seem to be most suitable.

The theory has been advanced that, with the practically 100 per cent penetration that can be obtained by preservatively treating thin boards and then gluing, possibly total net absorption of a laminated product can be somewhat less, or at the most not greater, than the total absorption of a solid piece and still give better resistance to decay.

Why Do Timbers Fail Suddenly? The behavior



T. Fred Burris, chief engineer, (Pere Marquette District), C&O; E. C. Vandenburg, chief engineer (ret.), C&NW; J. E. Winslow, Oxweld Railroad Service Company.



R. G. May, vice president, Operations and Maintenance Department, A.A.R.; C. B. Bronson, assistant chief engineer maintenance of way, New York Central.

under repeated loadings of timbers of sizes commonly used in railroad bridges and trestles is a subject being investigated by the Wood Bridges and Trestles committee. J. L. Leggett, Jr., associate professor of civil engineering, University of Kentucky, is conducting what are believed to be the world's first fatigue bending and static bending tests on bridge timbers. The initial tests are largely exploratory but he reports that failures which occur in horizontal shear will be sudden, without visible indication of stress, such as an appreciable increase in deflection.

Results so far from the tests direct attention to the relative weakness of timber in horizontal shear as compared with its high strength in fiber stress in bending. Shear failures will generally originate at that end of a stringer which has the least overhang beyond its support.

Can Bridges Be Made Fireproof? At present no recognized procedures are available for the appraisal of fire-retardant coatings offered for protection against timber bridge fires. To remedy this situation the Wood Bridges and Trestles committee is collaborating with the A.A.R. research staff to develop performance test standards, first for evaluating fire-retardant coatings, and later for impregnation treatments of wood for exposed structures and service. These tests have created considerable interest in the paint and chemical industry and a number of companies are reported to be attacking the problem.

Conserving Labor and Material. To be successful a program of salvaging and reclaiming timber and fastenings must be a planned joint venture of the engineering and stores departments of a railroad. There must be a policy established as to what is to be salvaged and reclaimed and for what purpose. It is evident, says the Wood Bridges and Trestles committee, that salvaging materials is not in itself conservation unless the material is employed for some useful purpose.

Better Concrete Is Target

Continuing its investigation of methods for improving the quality of concrete and mortars, the

Masonry committee directed its recent efforts toward the elimination of the expansion and pattern cracking of concrete. This is associated with the alkali-aggregate reaction, one of several recognized causes of concrete deterioration.

From its studies the committee determined that the materials which appeared most effective in reducing expansion resulting from the alkali-aggregate reaction are copper sulfate, the lithium salts and gas-entraining substances such as aluminum powder, various proteins and proprietary air-entraining agents. The best means of avoiding or minimizing the abnormal expansion and pattern cracking is the selection of non-reactive aggregates. If this is not possible, the committee continued, the use of restricted alkali in the cement or certain proved pozzolanic admixtures has been found to be effective in eliminating this type of deterioration.

Are Bridge Slabs Over-Designed? Because previous field testing indicated that current A.R.E.A. specifications provide for an excess of bar reinforcement, the Impact and Bridge Stresses committee had a full-size railroad slab designed in accordance with these specifications and then tested it to failure. While the slab was being tested the stresses in the concrete and reinforcement were measured for the complete range of loading. Also tested to failure were a new slab, designed in accordance with the ultimate-load theory; another slab prestressed by pretensioning and designed in accordance with current recommended practices; and two slabs over 40 years old, both recently removed from service on the Burlington because of deterioration.

Observations during the testing of these slabs show that the two old slabs, which carried a load over three and a half times their design load, carried about the same ultimate load, indicating a consistency of carrying capacity notwithstanding the fact that one slab showed considerably more deterioration than the other and had a substantial amount of concrete spalled off at many locations, particularly along the edge of the center third of the span, leaving many of the reinforcing bars exposed.

A comparison of the ultimate load carried by the



From the Chicago & North Western system—C. J. Freseman, division engineer; W. F. Huffman, assistant engineer maintenance; P. V. Thelander, assistant chief engineer; M. S. Reid, division engineer.

slab of the regular A.R.E.A. design and those carried by the ultimate-load and prestressed slabs shows that the three slabs sustained approximately the same load.

This is considered as being outstanding as all three slabs were designed by a different theory.

Painting Steel Surfaces. The Iron and Steel (Continued on page 103)

Manual Revisions

Owing to the critical review given by all committees to Manual material prior to its reprinting in 1953, only a few minor revisions to the existing text were recommended this year along with a number of new specifications and recommended practices. Some of the new specifications were offered only for comment and criticism with the view of resubmitting them in revised form next year for the inclusion in the Manual, while others were for action by this year's convention. Some of the more important specifications and recommended practices offered by the committees were as follows:

Roadway and Ballast—Prompted by an increasing number of explosions occurring in recent years in high-pressure gas and oil lines, this committee made a study of the current Manual material relating to underground pipeline crossings carrying flammable materials. Because that material did not cover high-pressure lines, the committee prepared and last year presented tentative Specifications for Pipeline Crossings Under Railway Tracks for flammable substances. These specifications, with minor revisions, were submitted this year for adoption as Manual material to replace the existing text under Section A.

The committee also rewrote the current text under Physical Properties of Earth Materials, added new Specifications for Test Borings, and new material on Methods of Protecting Against Drifting Snow and Opening Snow Blockades, which was in three parts, i.e., Protection Against Drifting Snow and Opening Snow Blockades, Specifications for Wood-Slat Portable Snow Fences, and Methods of Protection Against Drifting Sand—all for comment and criticism prior to preparation and submittal of a final report next year for adoption and publication in the Manual.

Rail—This committee recommended the adoption of the 140PS rail section and of the Pennsylvania's 140PS head-

contact joint bar with specified drillings as A.R.E.A. standards. A design of a headfree bar is being prepared for this rail section and will be submitted at a later meeting for adoption.

Track—Because the special parts required have not proved economical, the committee recommended the withdrawal of the plan of Guard Rails of Tee Rail Design and Planed Flares and Canted Plates. The committee also studied the plans for paved street turnouts, frogs and switches in the Portfolio of Trackwork Plans with respect to the various ranges of wheel bases and flanged wheels now being used on diesel and steam locomotives, and to provide details for tee-rail connections on the switches and mates because girder rails are not generally available. As a result this committee presented five new plans to replace the five current ones.

Buildings—Two tentative specifications, which were presented last year for comments and criticisms, were resubmitted this year with minor revisions for adoption and publication in the Manual. These were Application of Asbestos-Cement Siding, Shingles and Clapboards and Pile Foundations for Railway Buildings.

Wood Bridges and Trestles—Since more and more glued laminated lumber is being used by the building industry and the results of test installations of glued laminated bridges have been gratifying, the committee prepared Specifications for Structural Glued Laminated Lumber and presented them to the convention for comment and criticism with the view of submitting them next year for inclusion in the Manual.

Masonry—Because railroad engineers believe that reinforced concrete culvert pipe for railroad applications should meet higher test load and reinforcement requirements than are provided by present A.S.T.M. specifications, this committee prepared a tentative draft of Specifications for Reinforced Concrete Culvert Pipe and invited comments and criticisms with the idea that these specifications will be offered for adoption next year as Manual material.

Highways—After studying the principles concerning the location of highways parallel with railways as now in the Manual, the committee submitted recommended principles to cover the location of highways parallel with the railways in physically restricted areas to be added to Article 3, Rural Areas.

Water, Oil and Sanitation Services—After reviewing and condensing previous committee work and incorporating new material, this committee submitted recommendations for Railway Sewage Disposal Facilities for inclusion in the Manual under Part 8—Sanitation.

Yards and Terminals—Last year this committee submitted information on Store Facilities, Including Reclamation, Scrap and Material Yards, which it resubmitted this year for adoption and inclusion in the Manual.

Iron and Steel Structures—This committee submitted a report last year dealing with the verification and modification of the design data in the Specifications for Corrugated Structural Plate Pipe, which was resubmitted this year for adoption as Manual material.

Contract Forms—A Form of Agreement for Wire or Cable Line Crossings which was submitted last year for comments and criticisms was resubmitted this year for inclusion in the Manual. This committee also submitted two tentative forms, one for a Form of Agreement Covering Subsurface Rights to Mines Under Railway Carrier Property, and the other on a Form of Lease for Development of Oil and Gas on Railway Land. The intention is to present these forms a year hence for adoption.

On motions made from the convention floor, all the recommendations mentioned above were approved.

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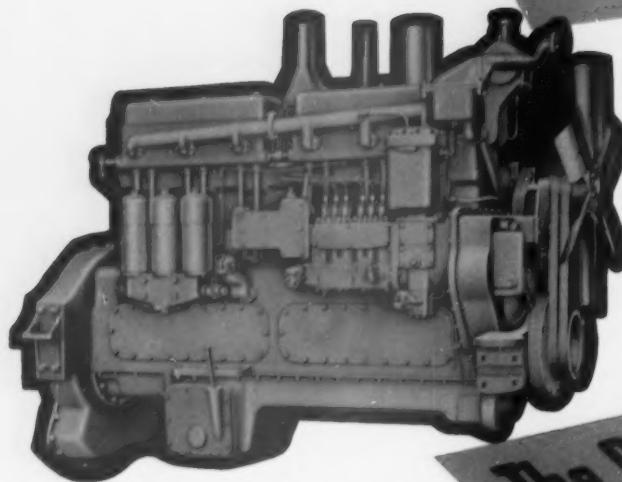
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(Continued from page 100)

Structures committee reported it had reviewed and approved a chapter on "Painting of Railroad Structures" and another on "Specifications for Surface Preparations, Pretreatment and Paint Application," which are part of a new painting manual produced by the Steel Structures Painting Council. In an address supplementing this report, Joseph Bigos, director of research for the council, discussed the cleaning and painting of railroad bridges, including hand and power cleaning and painting, and detergent-saturated steam cleaning.

Work Equipment Developments

The Committee on Maintenance-of-Way Work Equipment reported that 21 new machines and 5 attachments have been made available during the past year. Improvements were reported made on two existing machines, and the committee suggested improvements that should be made to five other existing machines to make them more useful.

Why Not Have Trained Mechanics? The time is long past, says the Work Equipment committee, when a "handy man" can maintain the many complicated and expensive machines now in use on the railroads. It is imperative that some definite method of training both field and shop work-equipment mechanics be placed in effect.

It is the committee's feeling that a road work-equipment mechanic is the better for some prior shop training, and a shop mechanic is the better if he has had some practical training in how the equipment he repairs is used in the field. Both classes of mechanics need the benefit of occasional schooling by trained manufacturers' servicemen.

Maintenance of Highway Vehicles. Since the railroads have purchased large fleets of trucks and passenger cars, these vehicles must now be considered as definite necessities and important enough to be in serviceable condition at all times. First, preventive steps must be taken to minimize failures, and these initial steps are the direct responsibility of the drivers, said the Work Equipment committee.

The committee suggested that major repairs and overhauling, including repainting, should be concentrated and performed at a central shop. Ordinarily these repairs can be made more economically by company mechanics. However, where there is no local repair shop equipped with the required tools and machines, or when the central shop is a great distance from headquarters, it is often more economical to have repairs made commercially.

Classification Yards

While recognizing that individual operating problems, owing to differences in the character and flow of traffic, require a variation in the arrangement of receiving and departure yards in relation to a hump classification yard, the Yards and Terminals committee presented diagrams for nine arrangements and discussed their advantages and disadvantages.

Waterfront Terminal Requisites. In a report dealing with the general aspects and features of waterfront terminals, the Yards and Terminals committee discussed the need for a storage yard to hold cars while waiting their turn at loading and unloading and, in addition, suggested that a classification yard, a ground storage yard and a car-repair yard might be provided if required by traffic.

This report also discussed the arrangement of tracks along the wharf or on a pier and suggested, if commodities such as coal, grain or bananas are usually handled at the wharf or piers, that conveyors, pipe lines, car dumpers, high-capacity cranes, hoppers and other similar equipment be considered.

Effect of Dieselization

What economies in maintenance-of-way and structures labor does the use of diesel locomotives have as compared with steam locomotives? The Committee on Economics of Railway Labor made a survey on this question and from the replies received came up with the following statements:

Diesel operation has little effect on rail wear
(Continued on page 105)



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E. E. Crowley, division engineer, Delaware & Hudson; E. L. Anderson, chief engineer, St. Louis-San Francisco.

(Continued from page 103)

on tangent track as compared with steam operation; however, there is some indication of slightly increased wear on the high rails of curves of 4 deg. or more. A considerable reduction in rail surface bends is noticeable. While driver burns have decreased in number they have increased in depth, but, with the fewer train stops required by diesels, there is an overall increase in the average gross tons handled by diesels over rail ultimately removed because of driver burns.

Observation to date indicates that diesel operation does not materially affect rail-end batter, head checks, shelly spots, corrugation, fillet cracks, head-and-web separations, or joint bar failures. The operation of diesel locomotives has very little, if any, effect on crossties, bridge ties, and bridge timber and piling. Some reduction in the maintenance of ballast is apparent with the reduction in the rate of fouling, and the reduction in the number of stops required for fuel and water.

Effect on Yards and Terminals. The outstanding effect of dieselization was reported by the Yards and Terminals committee to be the centralization of locomotive repair work at a few key points on each railroad system, and the elimination of remote shops.

Any Questions on Diesel Servicing? The increasing number of diesel-electric locomotives owned by the railroads during the past 10 years has resulted in a large number of problems arising from the servicing of these units. In a comprehensive report on this subject the Yards and Terminals committee described many solutions that have been worked out.

Water and Sanitation

Although most roads are using and obtaining excellent results from alkaline chromates as corrosion inhibitors for diesel cooling systems, the Water, Oil and Sanitation committee reported there is an interest in alternate types of inhibitors owing to possible skin irritations from the chromates. The committee stated that some roads are making tests with proprietary compounds consisting basically of ni-

trate-borax mixtures, but so far no instances have been reported of the same complete inhibition, on locomotives known to be difficult to inhibit, as those secured with the alkaline-chromate compounds.

What to Do with Railway Wastes. The separation of oil from liquid wastes is more of a problem for roads operating diesel power than those using steam engines, although the roads using residual oil for steam power experience considerable difficulty in the separation of the heavy fuel oil from waste water. One complication of the water pollution problem is the waste water from cleaning operations, which not only contains diesel fuel oil, emulsions and cleaning compounds used when cleaning, but also the silt and solid matter removed from the surfaces that have been cleaned. The Water, Oil and Sanitation committee suggested the desirability of using settling basins, the classification and separation of wastes, and some pretreatment prior to the use of any final separation method.

Economical Train Speeds

One of the assignments of the Committee on Economics of Railway Location and Operation was to determine the effects of higher speed on railway revenues, operating expenses and charges to capital account.

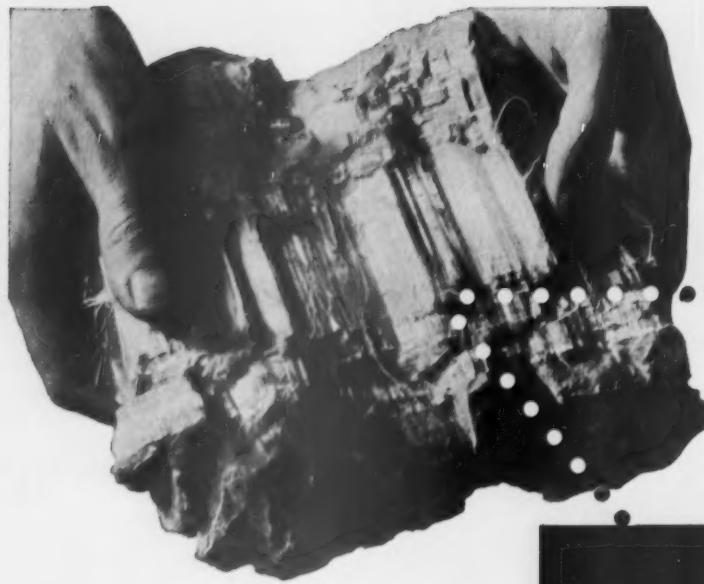
Using the well-known Davis formula for calculating the resistance of locomotives and cars, the committee presented three tables which analyzed the diesel-engine horsepower required for hauling trains at various speeds and on various grades. It was demonstrated that improvements in actual running time require large capital expenditures and, therefore, for economy, the maximum speed should be kept as low as can be done consistently and still meet truck competition.

Young Engineers Still Wanted

The Committee on Cooperative Relations with Universities reported on its efforts during the past year for engendering a greater interest among college and university students in the science of transportation.

Quite a few members of this committee made addresses in this regard before student groups, some speaking more than once. Noting a need for literature presenting a more attractive picture of a future in railroading as a career, the committee is developing a brochure suitable for both the high school and college undergraduate levels.

A new drafting material has been made available to engineers during the past year, said the Records and Accounts committee. This is a glass cloth which can be given various sensitized coatings to make it suitable for use as tracing cloth for ink or pencil, or for pencil only, or as cloth for scribing with a pointed instrument, for Van Dyke prints, for ammonia-developed prints, or for photographic reproductions. It is expensive, however, costing more than four to five times that of other good materials.



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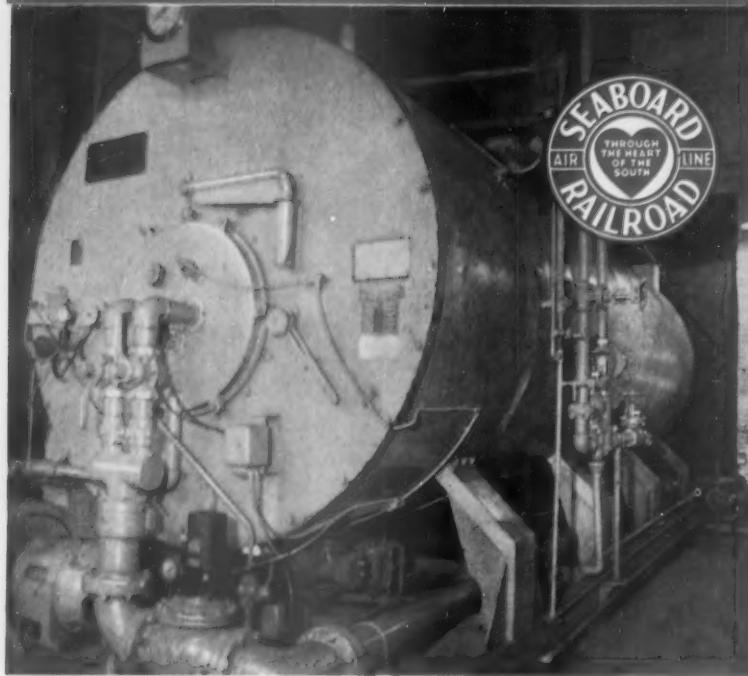
Freight Operating Statistics of Large Railways — Selected Items

Region, Road and Year	Miles of road operated	Train-miles	Locomotive-Miles		Car-Miles		Ton-miles (thousands)			Road locos. on line			
			Principal and helper	Light	Loaded	Per cent loaded	Gross, excl. locos. & tenders	Net, rev. and non-rev.	Servicable	Unstored	Stored	B.O.	
New Eng. Region	Boston & Maine	1,665	245,930	249,829	7,800	8,754	64.7	571,585	223,813	78	1	4	4.8
	1952	1,668	264,998	271,635	11,306	9,643	65.5	625,718	247,288	83	4	13	13.0
	N. Y., N. H., & Hfd.	1,748	280,984	280,990	19,424	10,696	64.5	682,531	271,863	90	..	4	4.3
	1952	1,761	308,259	308,684	18,909	11,497	69.9	721,081	313,644	93	..	4	4.1
Great Lakes Region	Delaware & Hudson	793	192,263	197,598	10,651	8,827	65.6	617,233	307,284	43	..	1	2.3
	1952	793	211,083	218,007	11,110	9,564	65.6	674,996	341,872	27	48	23	23.5
	Del., Lack. & Western	962	260,346	274,233	18,933	10,666	64.2	713,939	298,573	64
	Erie	2,224	540,231	543,950	23,349	28,613	65.6	1,792,404	690,745	167	..	4	2.3
Central Eastern Region	Grand Trunk Western	952	254,767	260,957	1,869	7,978	56.8	580,529	226,889	64	5	8	10.4
	1952	952	271,203	275,630	2,931	8,487	60.1	621,953	263,163	61	1	13	17.3
	Lehigh Valley	1,150	217,961	221,460	6,939	9,886	63.9	656,891	277,559	30	3	1	2.9
	1952	1,202	223,695	227,444	7,798	10,529	64.5	717,380	319,241	31	1	2	5.9
Penn.-Ohio Region	New York Central	10,667	2,469,623	2,520,317	94,055	90,510	56.1	6,748,161	2,812,598	670	69	131	15.1
	1952	10,668	2,723,391	2,801,407	111,063	101,304	58.1	7,464,705	3,206,645	776	70	214	26.2
	New York, Chic. & St. L.	2,161	680,254	705,547	7,024	24,524	59.6	1,794,977	726,792	182	35	34	13.5
	1952	2,160	784,422	814,522	7,864	28,185	66.6	2,076,622	658,704	190	2	47	19.6
Southern Region	Pitts. & Lake Erie	221	67,231	69,119	34	2,715	61.1	237,196	139,376	17	11	6	17.6
	1952	221	78,875	80,951	45	3,409	65.6	289,410	175,215	35	5	9	18.4
	Wabash	2,381	501,428	501,847	6,564	20,706	63.5	1,366,986	525,580	104	15	24	16.8
	1952	2,381	503,805	509,074	7,815	21,186	66.2	1,369,781	545,781	103	25	35	21.5
Atlantic Coast Line	Baltimore & Ohio	6,077	1,484,332	1,624,671	151,660	54,600	57.8	4,315,580	1,959,464	492	65	93	14.3
	1952	6,081	1,607,400	1,795,556	169,272	62,948	61.9	4,701,986	2,241,043	545	23	162	22.2
	Bessemer & Lake Erie	209	35,566	35,713	66	1,042	61.3	114,282	70,943	13	4
	1952	212	42,086	42,633	194	1,911	59.0	205,841	126,427	12	23	3	7.9
Central Western Region	Central of New Jersey	614	124,670	128,666	8,514	4,581	62.3	352,365	179,969	63	3	15	18.5
	1952	618	130,612	135,808	11,871	4,949	64.3	374,254	193,975	64	3	9	11.8
	Chicago & Eastern Ill.	868	119,503	119,503	2,537	4,481	61.8	320,613	151,047	26	..	2	7.1
	Elgin, Joliet & Eastern	236	89,126	89,663	14	2,649	61.4	215,681	114,682	37	3	1	2.4
Powers-Ohio Region	Pennsylvania System	9,922	2,632,431	2,817,257	231,907	101,614	59.0	7,554,895	3,310,136	861	290	330	22.3
	1952	9,945	3,090,664	3,314,469	249,950	117,484	62.2	8,723,588	3,957,498	1,020	26	393	27.3
	Reading	1,301	335,903	341,854	13,354	11,939	57.7	97,090	485,704	181	30	14	6.2
	Western Maryland	857	170,913	183,689	13,268	5,859	58.9	507,780	278,960	84	16	4	3.8
Southern Region	Chesapeake & Ohio	5,023	1,169,022	1,193,696	31,587	45,744	55.6	3,926,759	2,107,429	373	83	150	24.8
	1952	5,036	1,294,467	1,336,737	42,431	55,433	54.8	4,855,288	2,626,817	425	53	167	25.9
	Norfolk & Western	2,113	630,808	666,346	45,350	26,754	56.3	2,464,346	1,299,554	231	28	15	5.5
	1952	2,113	675,887	712,054	48,965	29,486	56.8	2,675,870	1,425,619	232	18	23	8.4
Northwestern Region	Atlantic Coast Line	5,354	778,459	778,465	9,424	23,736	54.2	1,790,281	751,891	240	..	5	2.0
	1952	5,368	855,948	855,966	10,188	25,676	58.0	1,921,069	836,016	280	16	17	5.4
	Central of Georgia	1,754	188,385	188,412	1,977	6,309	62.1	445,143	196,036	67	..	2	29
	1952	1,754	201,373	208,671	2,805	7,157	64.2	499,027	225,954	73	16	1	11
Gulf, Mobile & Ohio	Gulf, Mobile & Ohio	2,718	304,431	304,431	298	14,715	60.2	1,059,705	463,673	87	..	2	2.2
	1952	2,718	326,823	326,823	258	16,494	67.8	1,116,307	518,029	85	..	4	4.5
	Illinois Central	6,537	1,415,205	1,420,161	47,393	46,136	57.4	3,491,166	1,520,016	531	34	76	11.9
	1952	6,539	1,620,499	1,626,629	54,345	51,602	59.2	3,891,921	1,752,730	563	6	72	11.2
Louisville & Nashville	Louisville & Nashville	4,728	942,348	942,358	12,304	37,349	59.9	3,210,580	1,216,014	241	41	51	15.3
	1952	4,729	994,503	1,047,427	24,604	33,077	60.5	2,456,740	1,191,492	263	38	32	9.6
	Nash., Chatt. & St. Louis	1,032	184,247	188,709	3,808	5,530	59.0	393,555	165,524	51	..	2	3.8
	1952	1,032	201,263	204,986	3,980	6,123	67.8	405,371	185,386	49	..	4	7.5
Seaboard Air Line	Seaboard Air Line	4,067	620,349	620,349	2,402	23,064	58.1	1,727,189	733,028	144	..	5	3.4
	1952	4,070	664,945	664,945	3,261	24,743	60.6	1,795,233	781,021	151	68	4	1.8
	Southern	6,262	942,408	942,448	10,973	36,010	62.5	2,428,697	1,045,529	218	5	4	1.8
	1952	6,263	1,035,290	1,035,333	12,183	30,509	51.8	2,516,449	1,122,361	268	21	5	1.7
Chicago & North Western Region	Chicago & North Western	7,850	669,896	672,125	11,063	26,968	62.0	1,863,734	836,008	180	43	85	27.6
	1952	7,873	750,333	754,713	15,395	29,158	63.7	2,036,521	903,898	270	38	98	24.1
	Chicago Great Western	1,435	134,694	134,694	230	7,398	63.4	504,730	212,462	31	..	2	6.1
	1952	1,435	142,731	143,203	256	8,347	66.8	553,521	241,034	30	..	4	11.8
Chicago, Milwaukee, St. P. & Pao.	Chicago, Milwaukee, St. P. & Pao.	10,631	1,016,888	1,033,910	31,217	39,984	61.7	2,738,373	1,162,532	351	37	44	10.2
	1952	10,632	1,099,591	1,129,845	37,498	42,199	62.6	2,981,182	1,311,941	345	93	74	14.5
	Chicago, St. P., Minn. & Omaha	1,606	168,040	170,111	5,081	5,407	63.2	378,741	161,227	55	8	19	23.2
	1952	1,606	189,592	193,633	7,292	5,699	67.7	409,900	189,176	65	..	27	29.4
Duluth, Missabe & Iron Range	Duluth, Missabe & Iron Range	569	37,956	38,149	370	700	54.0	55,919	35,067	28	28	27	32.5
	1952	567	43,814	44,320	1,073	1,097	57.6	90,709	47,722	22	21	26	37.7
	Great Northern	8,293	1,007,052	1,010,024	31,557	37,518	67.9	2,553,645	1,164,164	264	174	40	8.4
	1952	8,291	1,097,717	1,100,491	34,605	38,483	68.4	2,664,794	1,204,181	289	153	62	12.3
Minnep., St. P. & S. M.	Minnep., St. P. & S. M.	4,169	377,214	378,829	4,200	10,727	67.0	681,235	343,872	104	3	14	11.6
	1952	4,172	394,847	398,023	2,697	11,758	66.2	766,689	349,561	110	..	14	11.3
	Northern Pacific	6,570	835,362	863,310	32,994	29,399	63.3	2,106,129	952,853	323	26	71	16.9
	1952	6,585	839,406	871,493	41,831	30,509	64.2	2,179,059	989,468	315	22	66	16.4
Atch., Top. & S. Fe (Incl. G. C. & S. F. & P. & S. F.)	Atch., Top. & S. Fe (Incl. G. C. & S. F. & P. & S. F.)	13,093	2,433,647	2,463,423	58,499	49,703	59.8	6,760,182	2,413,523	536	143	48	6.6
	1952	13,072	2,700,484	2,812,602	112,631	110,277	62.6	7,536,945	2,778,208	617	77	112	13.9
	Chi., Burlington & Quincy	8,834	1,183,539	1,186,015	43,062	46,047	61.8	3,196,332	1,365,570	309	53	38	9.5
	1952	8,835	1,229,400	1,240,522	12,306	48,887	62.9	3,357,787	1,446,463	351	15	103	22.0
Chi., Rock I. & Pao.	Chi., Rock I. & Pao.	8,066	894,251	895,541	6,992	32,973	57.5	2,448,260	971,895	175	1	7</td	

For the Month of December 1953 Compared with December 1952

Region, Road and Year		Freight cars on line				G.t.m per train-hr		G.t.m per train-mi		Net ton-mi		Net ton-mi		Car-day		Net daily		Train-miles per loco, per day	
		Home	Foreign	Total	Per Cent	B.O.	tenders	and	excl. locos.	and	train-mile	per l'd.	per car-day	per car-day	car-hour	road-mi.	per train-hour	miles per loco, per day	
New Eng.	Boston & Maine.....	1953	2,676	6,555	9,231	2.9	38,636	2,331	913	25.6	736	45.7	4,336	16.6	113.8				
		1952	1,675	7,693	9,368	2.6	39,900	2,364	934	25.6	829	49.4	4,782	16.9	101.8				
New Eng.	N. Y., N. H. & Htd.....	1953	3,556	10,971	14,527	2.6	40,343	2,429	968	25.4	558	34.1	5,017	16.6	120.2				
		1952	1,959	13,061	15,020	2.2	36,108	2,340	1,018	27.3	635	33.3	5,736	15.4	120.8				
Great Lakes Region	Delaware & Hudson.....	1953	7,548	3,913	11,461	5.7	61,533	3,227	1,696	34.8	881	38.6	12,500	19.2	165.7				
		1952	6,884	4,436	11,320	3.9	63,422	3,213	1,627	35.7	1,031	43.9	13,907	19.8	70.3				
Central Eastern Region	Del., Lack. & Western.....	1953	8,916	8,175	17,091	4.0	49,081	2,785	1,165	28.0	579	32.2	10,012	17.9	162.5				
		1952	6,864	9,052	15,916	4.2	51,075	2,959	1,317	29.6	751	37.8	12,111	17.5	142.5				
Erie.....	1953	11,809	14,623	26,432	4.0	62,072	3,347	1,290	24.1	846	53.6	10,019	18.7	119.2					
		1952	10,748	17,176	27,924	3.6	63,000	3,480	1,391	25.3	927	55.8	11,432	18.3	122.3				
Grand Trunk Western.....	1953	4,286	6,717	11,005	4.9	48,169	2,291	896	28.4	629	38.9	7,688	21.1	116.4					
		1952	3,878	8,325	12,203	4.2	48,035	2,308	976	31.0	676	36.2	8,917	20.9	126.5				
Lehigh Valley.....	1953	8,734	7,377	16,111	4.5	63,096	3,047	1,287	28.1	551	30.7	7,786	20.9	230.2					
		1952	3,488	9,518	13,006	4.6	68,381	3,240	1,442	30.3	773	39.5	8,567	21.3	230.4				
New York Central.....	1953	79,969	75,238	155,207	10.1	48,480	2,777	1,158	31.1	570	32.7	8,506	17.7	109.3					
		1952	61,276	93,287	154,563	8.3	47,109	2,785	1,196	31.7	640	34.8	9,696	17.2	98.5				
New York, Chic. & St. L.....	1953	11,105	8,931	20,036	6.9	48,601	2,674	1,083	29.6	1,123	63.5	10,849	18.4	100.1					
		1952	9,008	14,998	24,006	5.2	48,206	2,682	1,109	30.5	1,130	61.2	12,824	18.2	117.4				
Pitts. & Lake Erie.....	1953	6,718	8,105	14,823	5.2	55,433	3,540	2,080	51.3	335	10.7	20,344	15.7	70.0					
		1952	3,118	11,419	14,537	5.4	53,466	3,679	2,228	51.4	396	11.7	25,575	14.6	59.1				
Wabash.....	1953	9,257	10,147	19,404	8.8	63,923	2,743	1,055	25.4	888	55.1	7,121	23.4	121.1					
		1952	8,537	9,731	18,268	8.3	63,451	2,733	1,090	25.8	934	54.7	7,394	23.3	103.4				
Baltimore & Ohio.....	1953	59,412	38,307	97,719	4.7	45,911	2,944	1,337	35.9	647	31.2	10,401	15.8	93.0					
		1952	55,691	40,516	96,207	7.8	42,648	2,962	1,412	35.6	746	33.8	11,888	14.6	91.4				
Bessemer & Lake Erie.....	1953	8,185	574	8,759	9.0	48,985	3,357	2,084	68.1	286	6.9	10,950	15.2	57.2					
		1952	7,894	1,619	9,513	8.1	74,797	5,066	3,112	6.2	488	12.5	19,237	15.3	36.4				
Central of New Jersey.....	1953	5,514	7,966	13,480	9.0	40,073	2,970	1,517	39.3	423	17.3	9,455	14.2	77.8					
		1952	3,861	11,240	15,101	7.7	38,787	3,029	1,570	39.2	422	16.7	10,125	13.5	85.2				
Chicago & Eastern Ill.....	1953	3,523	2,839	6,362	6.8	45,992	2,702	1,273	33.7	789	37.8	5,613	17.1	152.1					
		1952	3,143	3,535	6,678	4.4	47,017	2,803	1,348	33.8	912	42.1	6,636	16.9	162.8				
Elgin, Joliet & Eastern.....	1953	7,325	8,991	16,316	5.0	20,471	2,549	1,355	43.3	217	8.2	15,676	8.5	93.2					
		1952	7,493	18,165	25,658	3.2	18,530	2,722	1,452	43.0	183	6.8	18,278	7.1	102.2				
Pennsylvania System.....	1953	108,024	96,975	204,999	7.6	51,504	2,956	1,295	32.6	521	27.1	10,762	17.9	72.2					
		1952	105,895	93,872	199,767	9.3	47,839	2,894	1,313	33.7	631	31.1	12,837	16.9	87.6				
Reading.....	1953	20,893	14,366	35,259	4.4	41,013	2,892	1,446	40.7	443	18.9	12,043	14.2	62.0					
		1952	18,879	17,455	36,334	5.6	46,607	2,997	1,572	43.0	535	20.4	14,321	13.6	74.9				
Western Maryland.....	1953	8,305	2,613	10,918	3.3	42,833	3,017	1,658	47.7	863	30.7	10,500	14.4	64.2					
		1952	6,811	2,798	9,609	4.6	40,752	2,895	1,614	47.1	1,060	36.6	11,479	14.4	62.3				
Point-to-Point Region	Chesapeake & Ohio.....	1953	62,554	16,401	78,955	3.3	62,603	3,375	1,811	46.1	879	34.3	13,534	18.6	71.3				
		1952	54,821	20,317	75,138	2.6	68,249	3,776	2,043	47.4	1,168	44.9	16,826	18.2	74.0				
Southern Region	Norfolk & Western.....	1953	42,308	4,818	47,126	1.0	68,439	3,978	2,098	48.6	900	32.9	19,840	17.5	91.0				
		1952	38,468	5,954	44,422	2.0	67,696	4,035	2,150	48.3	1,127	41.0	21,764	17.1	96.2				
Atlantic Coast Line.....	1953	22,767	15,058	37,825	1.8	39,191	2,314	972	31.7	668	38.9	4,530	17.0	115.5					
		1952	17,070	20,355	37,425	2.6	37,354	2,259	983	32.6	742	40.7	5,024	16.6	99.3				
Central of Georgia.....	1953	4,673	3,346	8,019	3.9	43,394	2,374	1,045	31.1	778	40.4	3,605	18.4	95.8					
		1952	3,363	5,140	8,505	4.8	43,595	2,493	1,129	31.6	873	43.1	4,156	17.6	79.0				
Gulf, Mobile & Ohio.....	1953	7,072	8,681	15,753	3.9	69,630	3,495	1,529	31.5	965	50.9	5,503	20.0	117.7					
		1952	5,154	9,178	14,332	3.4	68,632	3,431	1,592	31.4	1,145	53.8	6,148	20.1	126.4				
Illinois Central.....	1953	35,061	18,968	54,029	2.9	43,123	2,507	1,091	32.9	900	47.6	7,501	17.5	79.2					
		1952	28,595	26,506	55,101	1.8	41,350	2,447	1,102	34.0	1,094	54.4	8,647	17.2	90.1				
Louisville & Nashville.....	1953	41,892	10,223	52,115	2.5	43,167	2,460	1,199	36.9	701	31.7	7,683	17.6	107.1					
		1952	39,230	12,656	51,886	3.2	41,602	2,475	1,206	36.0	789	36.2	8,120	16.8	110.6				
Nash., Chatt. & St. Louis.....	1953	4,502	3,105	7,607	1.9	42,414	2,138	899	29.9	739	41.9	5,174	19.9	125.3					
		1952	2,357	3,936	6,293	3.6	41,981	2,018	923	30.3	975	47.5	5,795	20.8	140.6				
Seaboard Air Line.....	1953	15,080	12,461	27,541	2.2	50,520	2,827	1,200	31.8	872	47.2	5,814	18.1	156.2					
		1952	12,558	15,890	28,448	2.1	49,582	2,740	1,192	31.6	927	48.5	6,190	18.4	112.4				
Southern.....	1953	18,746	22,991	41,737	3.1	46,012	2,591	1,115	29.0	782	43.1	5,386	17.9	143.3					
		1952	13,535	29,429	42,964	3.3	41,263	2,451	1,093	37.4	837	43.2	5,781	17.0	125.4				
Chicago & North Western.....	1953	23,137	22,296	45,433	6.4	48,984	2,853	1,280	31.0	571	29.7	3,435	17.6	79.5					
		1952	20,527	26,977	47,504	4.3	47,121	2,796	1,241	31.0	603	30.5	3,704	17.4	67.2				
Chicago Great Western.....	1953	2,514	3,288	5,802	3.6	72,966	3,762	1,584	28.7	1,239	68.0	4,776	19.5	137.6					
		1952	1,316	6,633	7,949	2.3	69,555	3,884	1,691	28.9	999	51.8	5,418	17.9	142.5				
Chic., Milw., St. P. & Pac.....	1953	39,198	25,194	64,394	5.5	49,449	2,706	1,149	29.1	575	32.0	3,528	18.4	86.7					
		1952	34,587	32,339	66,926	3.5	48,656	2,724	1,199	30.4	644	33.9	3,969	17.9	79.8				
Chic., St. P., Minn. & Omaha.....	1953	1,169	6,883	8,052	4.8	31,824	2,285	973	29.8	616	32.7	3,238							

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Current Publications

PERIODICAL ARTICLE

DO TRUCKS BELONG ON OUR HIGHWAYS? By Frank Harvey. Argosy, February 1954. Popular Publications, Inc., 205 East 42nd st., New York 17. Single copies, 25 cents.

Mr. Harvey leans over backwards to be fair to trucks and to truck drivers. But he makes it perfectly clear that a lot of truck drivers think they own the highways—and to hell with passenger cars! Many truckers, he concludes, leave a lot to be desired—both in safety-consciousness and in driving ability. And he further feels that "everyone in America who drives a passenger car will get a better break" when and if trucks roll on their own highways, or on their own lanes added to existing highways—or on railroad cars.

NEW PERIODICAL

INDUSTRIAL DEVELOPMENT. Vol. 1, No. 1, January-February 1954. H. McKinley Conway, Jr., editor and publisher, 5009 Peachtree rd., Atlanta, Ga. \$3, one year; \$5, two years.

This is the first issue of a new bi-monthly magazine in the field of area analysis and business site selection. Mr. Conway says "The first issue of any series . . . is probably the least representative that is published. In our case 'Number 1' is more in the nature of a brochure outlining some of the things we hope to accomplish in time. Our objective in this initial number has been merely to indicate the type of coverage we expect to develop." Articles cover such subjects as: Will your plant be safe?; picking a site is like getting married; realtor gives site requirements; should cities finance plants?; New England looks to inner growth; and how to announce your move.

BOOKS

ECONOMICS OF TRANSPORTATION, by D. Philip Locklin. Fourth edition, 916 pages, maps, charts. Richard D. Irwin, Inc., 1818 Ridge rd., Homewood, Ill. \$8.65.

In its fourth edition this standard text has once again been completely revised, rewritten, reset, and brought up to date. While it preserves features associated with previous editions, particularly in maintaining emphasis on economic aspects of transportation and holding purely descriptive matter to a minimum, it has been extensively rewritten and there are numerous important changes. Every chapter has been modernized by including: (a) Up-to-date statistical data; (b) recent legislation; (c) commission and court decisions of special significance; (d) significant changes in regulatory

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policy; and (e) all important new developments in transportation. A new chapter has been added to provide an overall look at today's transportation system.

TAXES, NATIONAL SECURITY AND ECONOMIC GROWTH. 44 pages. Committee for Economic Development, Research and Policy Committee, 444 Madison Ave., New York 22. Free.

Discusses national security policies, taxes and economic growth, meaning of a balanced budget, the outlook for tax reduction in 1954 and later, and the general direction of tax reform.

FIFTY MILLION ACRES: CONFLICTS OVER KANSAS LAND POLICY, 1854-1890, by Paul Wallace Gates. Illustrations, maps, 311 pages. Cornell University Press, 124 Roberts pl., Ithaca, N.Y. \$4.50.

No other state has been so wracked by internal strife as was Kansas during the latter half of the nineteenth century. This book examines the causes of this conflict, which has often been thought to have centered around the problem of slavery. Professor Gates shows that the difficulty arose instead from opposing interests of large landowners—mainly railroads—and squatters. Both of these groups sought choice sites for farms, towns, railroad locations, and state institutions. Most of eastern and southern Kansas never was subject to preemption and homestead laws that made easy the path to land ownership by farmers and home builders.

The land fell instead to railroads and speculative groups, and the fact that railroads did not pay the usual land tax further aggravated resentment against them on the part of the settlers. The settlers concluded that it was their own labor in making improvements that enabled railroads to profit from sale of the land and that their own high taxes were a result of the fact that railroads did not pay taxes. As a result, for 40 years Kansas was the center of anti-landlord, anti-railroad warfare that made the state a byword for bushwhacking, jayhawking, anti-rent and anti-railroad wars, and for lurid politics. The uniqueness of the book lies in its demonstration of the evils resulting from the fact that public land laws were not permitted to operate in much of southern and eastern Kansas. Instead, the Indian Office sold lands secretly to large capitalistic interests, in particular the railroads. These railroad purchases, together with grants of land to the railroads, turned them into a major land-dispensing agency. Professor Gates says in the preface: "Kansas was selected for study because the story of its development involves analysis of a complex maze of inconsistent and badly-drawn legislation

(Continued on page 115)

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Spreading ballast is one of the many jobs versatile Tournapull can handle fast and economically. After dumping load, "D" spreads ballast with handy 1½-yd. dozer blade.

1 You don't need to call out a work crew for scattered maintenance jobs. One man and D Tournapull can be on a job 28 miles away in an hour. Unit takes most direct route . . . via highway, down or across tracks. It's light enough (24,450 lbs.) to go over almost any bridge . . . narrow enough (8'3") to safely travel any highway or right-of-way. You can go anyplace in your division, handle one or more average maintenance assignments, get back the same day.

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Manufacturing Engineers

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(Continued from page 111)
complicated by blundering, stupid, and corrupt administration. . . . These confusions . . . make the Kansas story a grotesque composite of all the errors involved in the growth of the American West."

FILMS

STYROFOAM FOR LOW TEMPERATURE INSULATION. 18-min., black and white, sound. Merchandising section, Plastics Sales dept., Dow Chemical Company, Midland, Mich. Free.

Presents properties, principles of proper installation, how to work Styrofoam on conventional fabricating equipment, typical applications, and correct finishing technique. Among advantages of Styrofoam featured in the film are the low thermal conductivity of this expanded polystyrene plastic, structural strength, water-resistance and light weight.

ESCAPE FROM LIMBO. 26-min., 16-mm., sound, color. Produced by Unifilms, Inc., for the safety department of the Pennsylvania. Inquiries for sale or rental should be directed to the producer at 146 E. 47th st., New York 17, N.Y.

This is the third of four motion pictures being produced by Unifilms to aid the Pennsylvania in its fight to reduce personal injuries. The film, for showing to employees in train service, and yard operating forces, tells in allegorical style about a railroad man who, unconscious from a hunting accident, dreamed he was forced after death to return from limbo to earth to whisper encouragement to potential safety violators. When the railroader discovers his whispering is futile, he returns to limbo to confront his "boss" with the conclusion that "every man is his own keeper" and that no outside suggestion can control him.

WHATEVER WE DO. 23 min., 16-mm., sound, color. Air Reduction Sales Company, 60 E. 42nd st., New York 17. Available on loan from the New York office or any district office.

A basic documentary film about atmospheric gases—oxygen, nitrogen, argon, helium and other rare gases, covering their uses in industry, and the numberless ways they appear in our daily lives as parts of familiar products. The story of how gases in pure form are separated individually from air is described with the assistance of detailed animation. Also, there are views of the buildings and machinery required to separate, store and package these invisible elements. Dependability and flexibility, the main advantages of the Airco bulk-delivery system, are demonstrated by tracing a shipment of gases to a customer's

plant. The film was produced to explain, in an easy-to-understand fashion, the manufacturing process and distribution system involved in marketing atmospheric gases. This is augmented by many examples of the ever widening applications for these gases. The film is suited for projection at sales meetings, employee training sessions, management development meetings and technical and employee group meetings.

ings on application to Safety department, Southern Pacific, 65 Market st., San Francisco 5.

Filmed to teach elementary school children that railroad property is a dangerous place to play, this new SP safety effort is based on recommendations by school, police and teachers' college authorities in the San Francisco Bay area. Through flashbacks, a veteran locomotive engineer describes some of his past experiences with children playing on the railroad. A unique touch is that, aside from the engineer, who is a professional actor, all parts are played by SP employees and their children.

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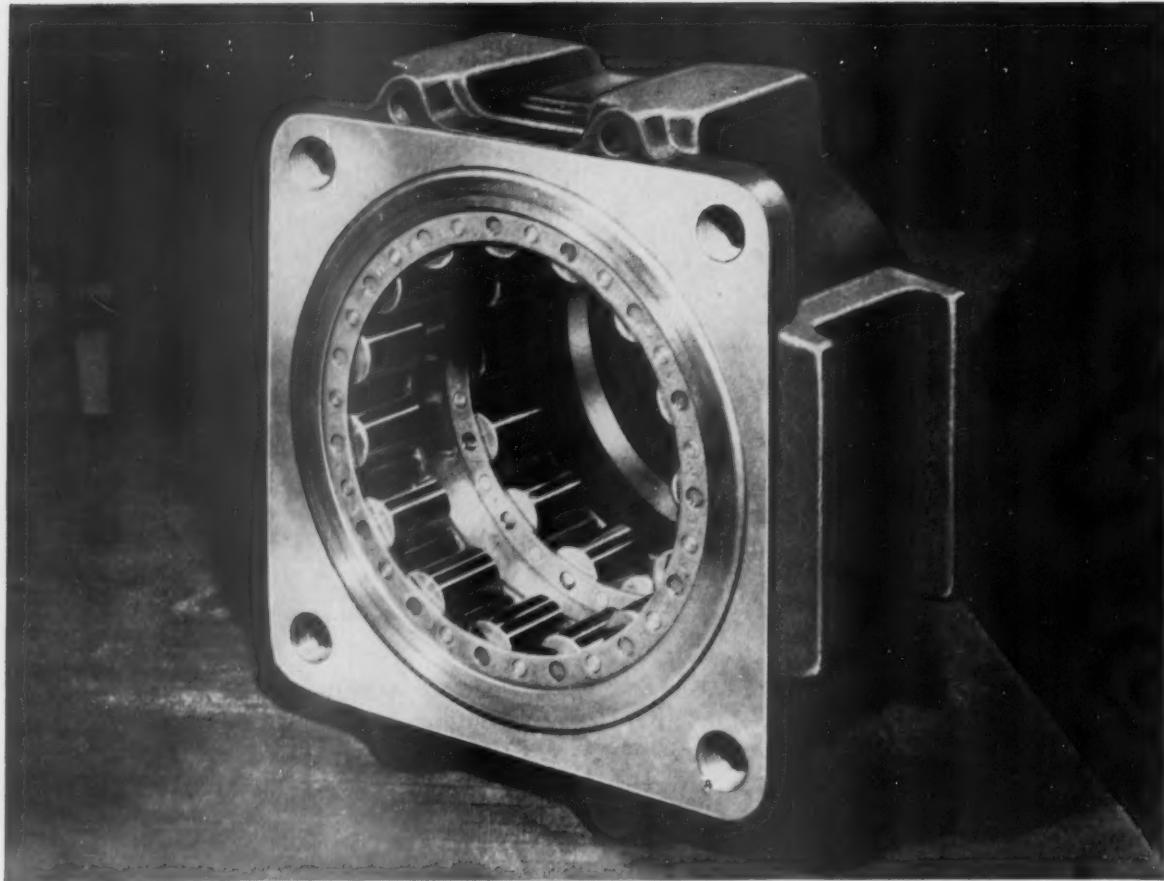
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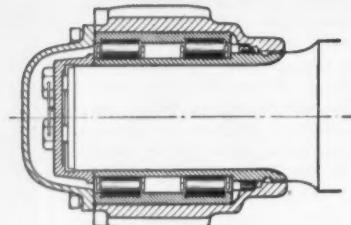


This is the Bower-Franklin Roller-bearing journal box for freight cars

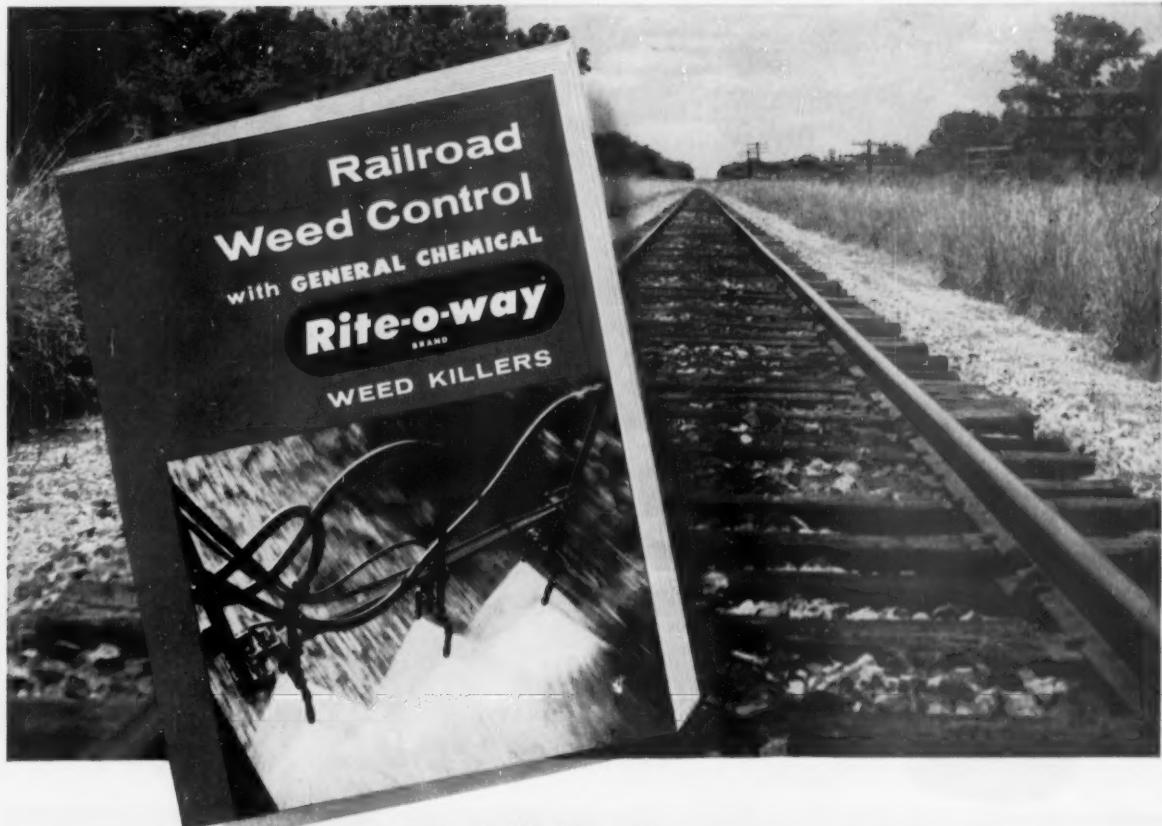
The straight roller bearings for this freight car journal box are made by the Bower Roller Bearing Company of Detroit. The inner race fits standard AAR roller bearing axles. Two rows of straight rolls, running between the inner and outer races are positioned by a sturdy retainer. The one-piece outer race is contained in a separate, ruggedly built journal box housing. The bearing permits free

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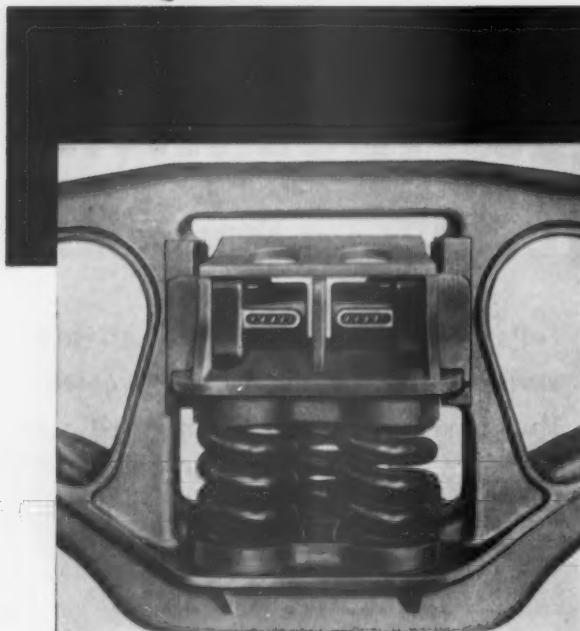
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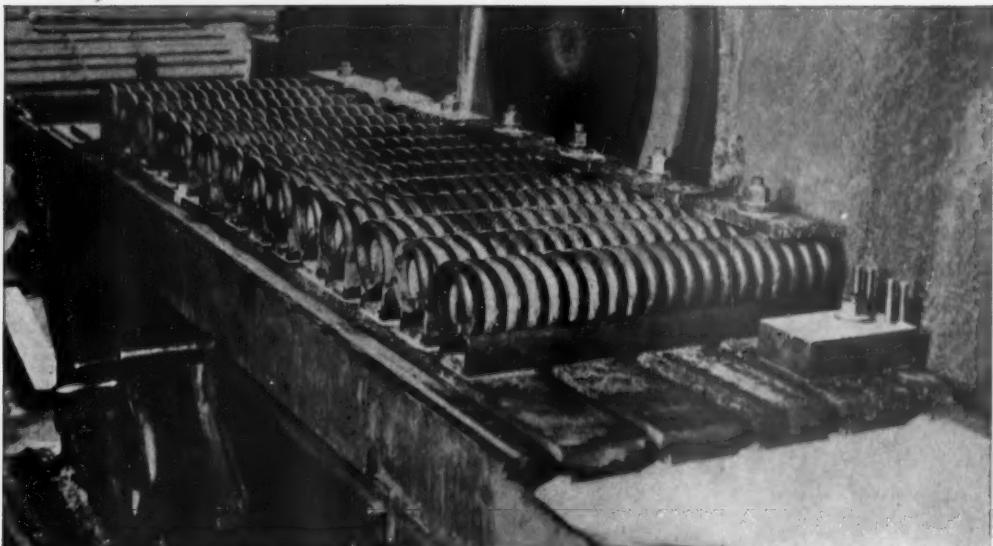
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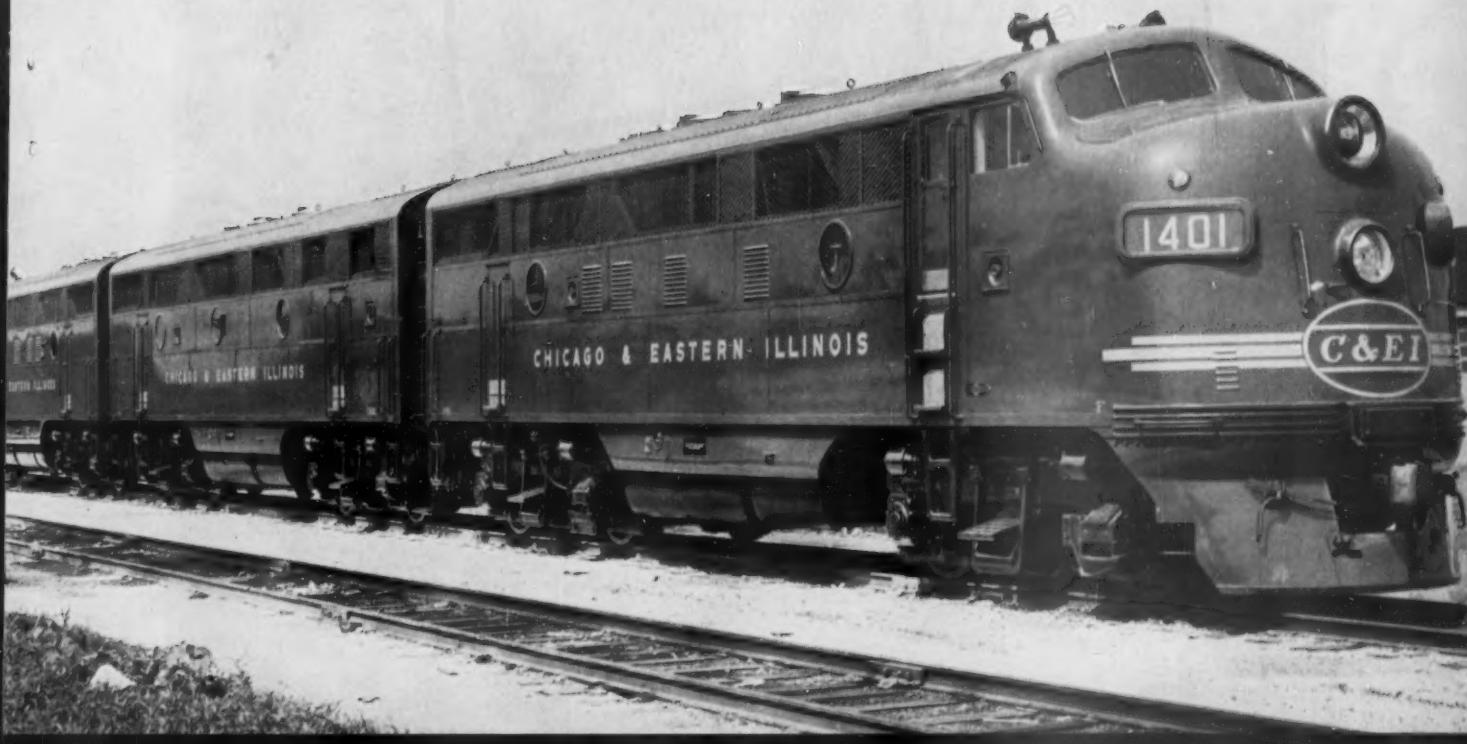


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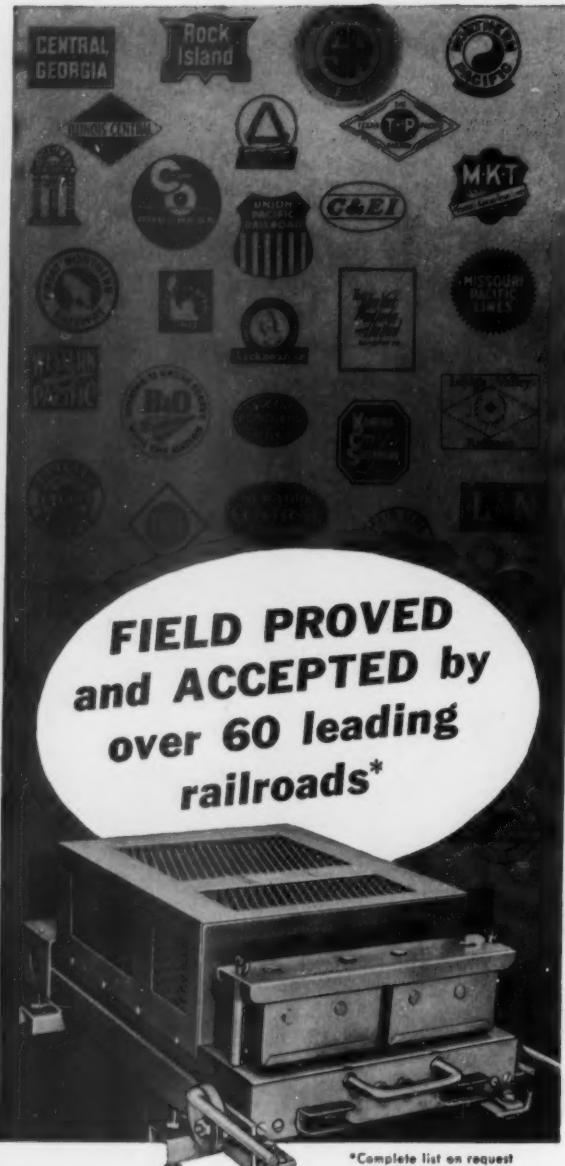
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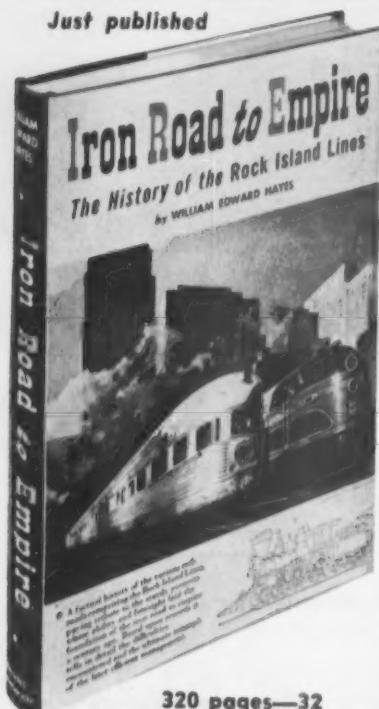
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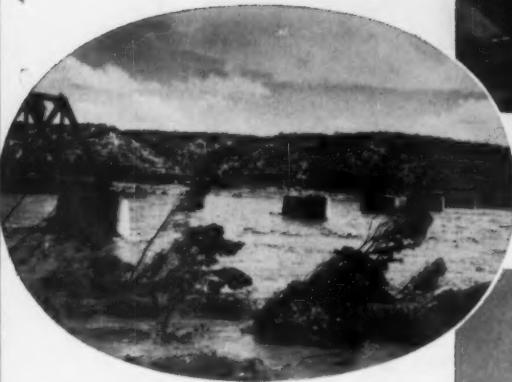
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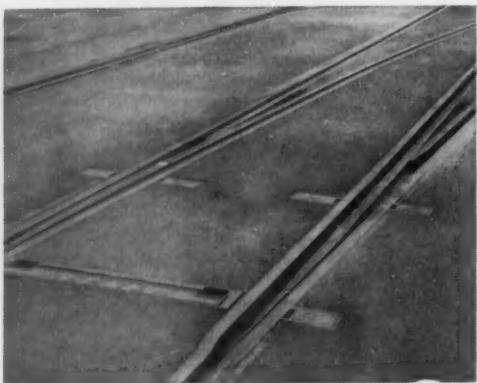
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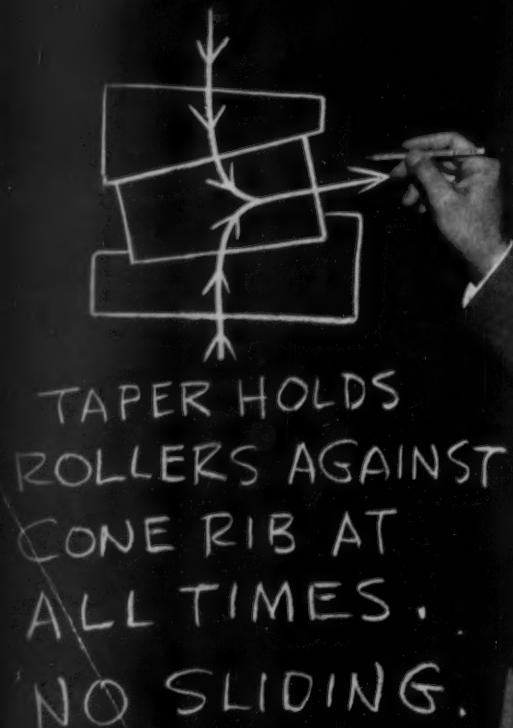
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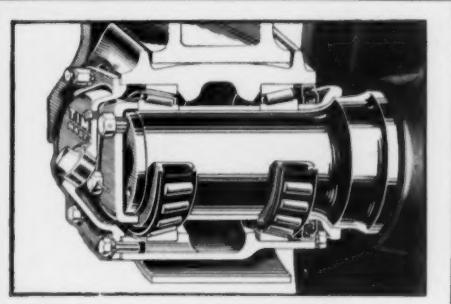
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